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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

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Dose Conversion Factor (and Related) Parameter Summary (continued)

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Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsat. zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsat. zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Surface CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Surface CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Surface CSM

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Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g	
Area: 153375.00 square meters	Am-241	1.000E+00
Thickness: 0.15 meters	Np-237	1.000E+00
Cover Depth: 0.00 meters	Pu-239	1.000E+00
	Pu-240	1.000E+00
	Tc-99	1.000E+00
	U-234	1.000E+00
	U-235	1.000E+00
	U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.269E+00	2.218E+00	2.120E+00	1.820E+00	1.230E+00	4.839E-01	0.000E+00	0.000E+00
M(t):	9.076E-02	8.873E-02	8.482E-02	7.281E-02	4.921E-02	1.936E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 2.269E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Surface CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.100E-02	0.0048	4.378E-03	0.0019	0.000E+00	0.0000	4.026E-02	0.0177	5.333E-03	0.0024	7.637E-04	0.0003	5.153E-02	0.0227
Np-237	2.594E-01	0.1143	5.252E-03	0.0023	0.000E+00	0.0000	9.698E-01	0.4274	1.395E-01	0.0615	4.890E-03	0.0022	6.205E-02	0.0273
Pu-239	7.211E-05	0.0000	4.232E-03	0.0019	0.000E+00	0.0000	3.917E-02	0.0173	1.038E-02	0.0046	3.678E-04	0.0002	5.014E-02	0.0221
Pu-240	3.687E-05	0.0000	4.232E-03	0.0019	0.000E+00	0.0000	3.917E-02	0.0173	1.038E-02	0.0046	3.678E-04	0.0002	5.014E-02	0.0221
Tc-99	3.129E-05	0.0000	8.182E-08	0.0000	0.000E+00	0.0000	1.492E-01	0.0658	1.778E-04	0.0001	4.863E-03	0.0021	2.061E-05	0.0000
U-234	1.003E-04	0.0000	1.301E-03	0.0006	0.000E+00	0.0000	1.157E-02	0.0051	1.090E-02	0.0048	1.796E-02	0.0079	4.003E-03	0.0018
U-235	1.846E-01	0.0813	1.212E-03	0.0005	0.000E+00	0.0000	1.094E-02	0.0048	1.030E-02	0.0045	1.697E-02	0.0075	3.784E-03	0.0017
U-238	3.496E-02	0.0154	1.163E-03	0.0005	0.000E+00	0.0000	1.098E-02	0.0048	1.035E-02	0.0046	1.705E-02	0.0075	3.801E-03	0.0017
Total	4.902E-01	0.2160	2.177E-02	0.0096	0.000E+00	0.0000	1.271E+00	0.5602	1.973E-01	0.0870	6.323E-02	0.0279	2.255E-01	0.0994

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.133E-01	0.0499
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.441E+00	0.6350
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.044E-01	0.0460
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.043E-01	0.0460
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-01	0.0680
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.584E-02	0.0202
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.278E-01	0.1004
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.831E-02	0.0345
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.269E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.098E-02	0.0049	4.353E-03	0.0020	0.000E+00	0.0000	4.003E-02	0.0180	5.303E-03	0.0024	7.593E-04	0.0003	5.123E-02	0.0231
Np-237	2.518E-01	0.1135	5.080E-03	0.0023	0.000E+00	0.0000	9.383E-01	0.4230	1.350E-01	0.0608	4.730E-03	0.0021	6.002E-02	0.0271
Pu-239	7.204E-05	0.0000	4.212E-03	0.0019	0.000E+00	0.0000	3.899E-02	0.0176	1.033E-02	0.0047	3.661E-04	0.0002	4.990E-02	0.0225
Pu-240	3.684E-05	0.0000	4.212E-03	0.0019	0.000E+00	0.0000	3.898E-02	0.0176	1.033E-02	0.0047	3.661E-04	0.0002	4.990E-02	0.0225
Tc-99	3.107E-05	0.0000	8.093E-08	0.0000	0.000E+00	0.0000	1.476E-01	0.0665	1.758E-04	0.0001	4.810E-03	0.0022	2.039E-05	0.0000
U-234	9.998E-05	0.0000	1.292E-03	0.0006	0.000E+00	0.0000	1.149E-02	0.0052	1.083E-02	0.0049	1.784E-02	0.0080	3.976E-03	0.0018
U-235	1.840E-01	0.0829	1.204E-03	0.0005	0.000E+00	0.0000	1.089E-02	0.0049	1.023E-02	0.0046	1.685E-02	0.0076	3.761E-03	0.0017
U-238	3.483E-02	0.0157	1.155E-03	0.0005	0.000E+00	0.0000	1.091E-02	0.0049	1.028E-02	0.0046	1.693E-02	0.0076	3.775E-03	0.0017
Total	4.818E-01	0.2172	2.151E-02	0.0097	0.000E+00	0.0000	1.237E+00	0.5577	1.924E-01	0.0868	6.265E-02	0.0282	2.226E-01	0.1003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-01	0.0508
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.395E+00	0.6288
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.039E-01	0.0468
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.038E-01	0.0468
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.527E-01	0.0688
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.552E-02	0.0205
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.269E-01	0.1023
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.788E-02	0.0351
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.218E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.094E-02	0.0052	4.303E-03	0.0020	0.000E+00	0.0000	3.957E-02	0.0187	5.243E-03	0.0025	7.507E-04	0.0004	5.065E-02	0.0239
Np-237	2.373E-01	0.1119	4.754E-03	0.0022	0.000E+00	0.0000	8.780E-01	0.4140	1.263E-01	0.0596	4.427E-03	0.0021	5.616E-02	0.0265
Pu-239	7.189E-05	0.0000	4.173E-03	0.0020	0.000E+00	0.0000	3.863E-02	0.0182	1.023E-02	0.0048	3.627E-04	0.0002	4.944E-02	0.0233
Pu-240	3.679E-05	0.0000	4.172E-03	0.0020	0.000E+00	0.0000	3.862E-02	0.0182	1.023E-02	0.0048	3.626E-04	0.0002	4.943E-02	0.0233
Tc-99	3.064E-05	0.0000	7.917E-08	0.0000	0.000E+00	0.0000	1.444E-01	0.0681	1.720E-04	0.0001	4.706E-03	0.0022	1.995E-05	0.0000
U-234	9.942E-05	0.0000	1.274E-03	0.0006	0.000E+00	0.0000	1.133E-02	0.0053	1.068E-02	0.0050	1.759E-02	0.0083	3.920E-03	0.0018
U-235	1.827E-01	0.0862	1.188E-03	0.0006	0.000E+00	0.0000	1.079E-02	0.0051	1.009E-02	0.0048	1.661E-02	0.0078	3.715E-03	0.0018
U-238	3.456E-02	0.0163	1.139E-03	0.0005	0.000E+00	0.0000	1.076E-02	0.0051	1.014E-02	0.0048	1.670E-02	0.0079	3.722E-03	0.0018
Total	4.658E-01	0.2196	2.100E-02	0.0099	0.000E+00	0.0000	1.172E+00	0.5527	1.831E-01	0.0863	6.151E-02	0.0290	2.171E-01	0.1024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.115E-01	0.0526
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.307E+00	0.6163
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.029E-01	0.0485
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.028E-01	0.0485
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.493E-01	0.0704
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.489E-02	0.0212
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.251E-01	0.1062
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.702E-02	0.0363
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.120E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.081E-02	0.0059	4.132E-03	0.0023	0.000E+00	0.0000	3.800E-02	0.0209	5.034E-03	0.0028	7.208E-04	0.0004	4.863E-02	0.0267
Np-237	1.927E-01	0.1058	3.766E-03	0.0021	0.000E+00	0.0000	6.955E-01	0.3821	1.000E-01	0.0550	3.507E-03	0.0019	4.449E-02	0.0244
Pu-239	7.138E-05	0.0000	4.036E-03	0.0022	0.000E+00	0.0000	3.736E-02	0.0205	9.900E-03	0.0054	3.508E-04	0.0002	4.782E-02	0.0263
Pu-240	3.660E-05	0.0000	4.033E-03	0.0022	0.000E+00	0.0000	3.733E-02	0.0205	9.892E-03	0.0054	3.506E-04	0.0002	4.778E-02	0.0263
Tc-99	2.917E-05	0.0000	7.328E-08	0.0000	0.000E+00	0.0000	1.337E-01	0.0734	1.592E-04	0.0001	4.356E-03	0.0024	1.846E-05	0.0000
U-234	9.776E-05	0.0001	1.212E-03	0.0007	0.000E+00	0.0000	1.078E-02	0.0059	1.016E-02	0.0056	1.673E-02	0.0092	3.730E-03	0.0020
U-235	1.784E-01	0.0980	1.134E-03	0.0006	0.000E+00	0.0000	1.043E-02	0.0057	9.599E-03	0.0053	1.581E-02	0.0087	3.562E-03	0.0020
U-238	3.365E-02	0.0185	1.084E-03	0.0006	0.000E+00	0.0000	1.023E-02	0.0056	9.646E-03	0.0053	1.589E-02	0.0087	3.542E-03	0.0019
Total	4.158E-01	0.2284	1.940E-02	0.0107	0.000E+00	0.0000	9.733E-01	0.5347	1.544E-01	0.0848	5.772E-02	0.0317	1.996E-01	0.1096

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.073E-01	0.0590
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.040E+00	0.5713
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.954E-02	0.0547
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.942E-02	0.0546
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.382E-01	0.0759
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.271E-02	0.0235
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.190E-01	0.1203
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.405E-02	0.0407
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.820E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.045E-02	0.0085	3.661E-03	0.0030	0.000E+00	0.0000	3.367E-02	0.0274	4.461E-03	0.0036	6.387E-04	0.0005	4.309E-02	0.0350
Np-237	1.060E-01	0.0862	1.926E-03	0.0016	0.000E+00	0.0000	3.557E-01	0.2891	5.116E-02	0.0416	1.794E-03	0.0015	2.275E-02	0.0185
Pu-239	6.980E-05	0.0001	3.652E-03	0.0030	0.000E+00	0.0000	3.380E-02	0.0275	8.957E-03	0.0073	3.174E-04	0.0003	4.327E-02	0.0352
Pu-240	3.605E-05	0.0000	3.644E-03	0.0030	0.000E+00	0.0000	3.372E-02	0.0274	8.936E-03	0.0073	3.167E-04	0.0003	4.317E-02	0.0351
Tc-99	2.533E-05	0.0000	5.847E-08	0.0000	0.000E+00	0.0000	1.067E-01	0.0867	1.271E-04	0.0001	3.476E-03	0.0028	1.473E-05	0.0000
U-234	9.549E-05	0.0001	1.047E-03	0.0009	0.000E+00	0.0000	9.308E-03	0.0076	8.771E-03	0.0071	1.445E-02	0.0117	3.222E-03	0.0026
U-235	1.665E-01	0.1353	9.946E-04	0.0008	0.000E+00	0.0000	9.456E-03	0.0077	8.289E-03	0.0067	1.365E-02	0.0111	3.164E-03	0.0026
U-238	3.109E-02	0.0253	9.355E-04	0.0008	0.000E+00	0.0000	8.836E-03	0.0072	8.329E-03	0.0068	1.372E-02	0.0112	3.058E-03	0.0025
Total	3.142E-01	0.2554	1.586E-02	0.0129	0.000E+00	0.0000	5.911E-01	0.4805	9.903E-02	0.0805	4.836E-02	0.0393	1.617E-01	0.1315

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.597E-02	0.0780
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.393E-01	0.4383
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.007E-02	0.0732
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.982E-02	0.0730
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.103E-01	0.0896
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.689E-02	0.0300
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.020E-01	0.1642
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.597E-02	0.0536
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.230E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.227E-03	0.0191	2.215E-03	0.0046	0.000E+00	0.0000	2.038E-02	0.0421	2.700E-03	0.0056	3.864E-04	0.0008	2.607E-02	0.0539
Np-237	1.253E-02	0.0259	1.703E-04	0.0004	0.000E+00	0.0000	3.144E-02	0.0650	4.523E-03	0.0093	1.597E-04	0.0003	2.011E-03	0.0042
Pu-239	6.237E-05	0.0001	2.378E-03	0.0049	0.000E+00	0.0000	2.201E-02	0.0455	5.833E-03	0.0121	2.067E-04	0.0004	2.817E-02	0.0582
Pu-240	3.399E-05	0.0001	2.360E-03	0.0049	0.000E+00	0.0000	2.184E-02	0.0451	5.788E-03	0.0120	2.051E-04	0.0004	2.796E-02	0.0578
Tc-99	1.522E-05	0.0000	2.452E-08	0.0000	0.000E+00	0.0000	4.473E-02	0.0924	5.330E-05	0.0001	1.458E-03	0.0030	6.177E-06	0.0000
U-234	1.077E-04	0.0002	5.794E-04	0.0012	0.000E+00	0.0000	5.157E-03	0.0107	4.848E-03	0.0100	7.984E-03	0.0165	1.783E-03	0.0037
U-235	1.258E-01	0.2599	6.030E-04	0.0012	0.000E+00	0.0000	6.247E-03	0.0129	4.588E-03	0.0095	7.550E-03	0.0156	2.003E-03	0.0041
U-238	2.250E-02	0.0465	5.171E-04	0.0011	0.000E+00	0.0000	4.884E-03	0.0101	4.604E-03	0.0095	7.582E-03	0.0157	1.690E-03	0.0035
Total	1.703E-01	0.3518	8.823E-03	0.0182	0.000E+00	0.0000	1.567E-01	0.3238	3.294E-02	0.0681	2.553E-02	0.0528	8.970E-02	0.1854

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.097E-02	0.1260
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.083E-02	0.1050
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.867E-02	0.1212
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.819E-02	0.1202
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.626E-02	0.0956
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.046E-02	0.0423
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.468E-01	0.3033
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.178E-02	0.0863
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.839E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM

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Attachment 4 to HEM-11-91

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.133E-01	1.127E-01	1.115E-01	1.073E-01	9.596E-02	6.096E-02	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	2.226E-07	6.785E-07	1.542E-06	4.087E-06	8.329E-06	8.877E-06	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	1.211E-14	7.963E-14	3.988E-13	3.168E-12	1.977E-11	7.783E-11	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	3.114E-18	4.400E-17	4.912E-16	1.199E-14	2.408E-13	4.495E-12	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		1.133E-01	1.127E-01	1.115E-01	1.073E-01	9.597E-02	6.097E-02	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	1.441E+00	1.395E+00	1.307E+00	1.040E+00	5.393E-01	5.083E-02	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	1.089E-07	3.076E-07	6.805E-07	1.766E-06	3.482E-06	3.253E-06	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	3.751E-11	2.492E-10	1.264E-09	1.030E-08	6.860E-08	3.514E-07	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		1.441E+00	1.395E+00	1.307E+00	1.040E+00	5.393E-01	5.083E-02	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	1.044E-01	1.039E-01	1.029E-01	9.954E-02	9.007E-02	5.867E-02	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	1.114E-10	3.348E-10	7.779E-10	2.288E-09	6.260E-09	1.611E-08	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	4.795E-15	3.351E-14	1.754E-13	1.512E-12	1.140E-11	7.773E-11	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	3.058E-17	4.154E-16	4.520E-15	1.078E-13	2.101E-12	3.635E-11	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		1.044E-01	1.039E-01	1.029E-01	9.954E-02	9.007E-02	5.867E-02	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	5.164E-09	5.139E-09	5.091E-09	4.921E-09	4.446E-09	2.880E-09	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	1.043E-01	1.038E-01	1.028E-01	9.942E-02	8.982E-02	5.819E-02	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	6.204E-10	1.896E-09	4.407E-09	1.273E-08	3.271E-08	6.468E-08	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	2.857E-20	1.776E-19	8.775E-19	7.323E-18	5.462E-17	3.697E-16	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	1.858E-20	2.801E-19	3.123E-18	6.775E-17	1.005E-15	1.101E-14	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	1.113E-21	3.109E-20	6.516E-19	2.916E-17	6.606E-16	9.272E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		1.043E-01	1.038E-01	1.028E-01	9.942E-02	8.982E-02	5.819E-02	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.543E-01	1.527E-01	1.493E-01	1.382E-01	1.103E-01	4.626E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	4.584E-02	4.552E-02	4.488E-02	4.271E-02	3.688E-02	2.040E-02	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	1.002E-07	2.725E-07	6.089E-07	1.728E-06	4.447E-06	9.061E-06	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	2.365E-09	1.682E-08	8.904E-08	7.814E-07	6.149E-06	4.941E-05	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	7.731E-12	8.882E-11	8.497E-10	1.834E-08	3.339E-07	4.912E-06	0.000E+00	0.000E+00
U-234	ΣDSR (j)		4.584E-02	4.552E-02	4.489E-02	4.271E-02	3.689E-02	2.046E-02	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	2.278E-01	2.269E-01	2.250E-01	2.187E-01	2.011E-01	1.444E-01	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	1.466E-05	4.376E-05	1.010E-04	2.911E-04	7.510E-04	1.517E-03	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	1.192E-07	7.636E-07	3.792E-06	3.020E-05	1.934E-04	8.904E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		2.278E-01	2.269E-01	2.251E-01	2.190E-01	2.020E-01	1.468E-01	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	2.226E-06	2.211E-06	2.180E-06	2.074E-06	1.791E-06	9.900E-07	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	7.831E-02	7.788E-02	7.701E-02	7.404E-02	6.596E-02	4.177E-02	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	6.490E-08	1.935E-07	4.453E-07	1.271E-06	3.189E-06	5.811E-06	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	1.021E-13	6.303E-13	3.109E-12	2.582E-11	1.899E-10	1.228E-09	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	1.659E-15	2.536E-14	2.970E-13	7.719E-12	1.747E-10	4.482E-09	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	4.782E-18	1.124E-16	2.270E-15	1.414E-13	7.510E-12	3.774E-10	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		7.831E-02	7.788E-02	7.702E-02	7.404E-02	6.597E-02	4.178E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	2.207E+02	2.219E+02	2.243E+02	2.329E+02	2.605E+02	4.100E+02	*3.431E+12	*3.431E+12
Np-237	1.735E+01	1.792E+01	1.913E+01	2.404E+01	4.636E+01	4.918E+02	*7.047E+08	*7.047E+08
Pu-239	2.396E+02	2.407E+02	2.429E+02	2.512E+02	2.776E+02	4.261E+02	*6.214E+10	*6.214E+10
Pu-240	2.396E+02	2.408E+02	2.431E+02	2.515E+02	2.783E+02	4.296E+02	*2.278E+11	*2.278E+11
Tc-99	1.620E+02	1.638E+02	1.674E+02	1.809E+02	2.267E+02	5.404E+02	*1.697E+10	*1.697E+10
U-234	5.454E+02	5.492E+02	5.570E+02	5.853E+02	6.777E+02	1.222E+03	*6.247E+09	*6.247E+09
U-235	1.097E+02	1.102E+02	1.111E+02	1.142E+02	1.238E+02	1.703E+02	*2.161E+06	*2.161E+06
U-238	3.192E+02	3.210E+02	3.246E+02	3.376E+02	3.790E+02	5.984E+02	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	1.133E-01	2.207E+02	1.133E-01	2.207E+02
Np-237	1.000E+00	0.000E+00	1.441E+00	1.735E+01	1.441E+00	1.735E+01
Pu-239	1.000E+00	0.000E+00	1.044E-01	2.396E+02	1.044E-01	2.396E+02
Pu-240	1.000E+00	0.000E+00	1.043E-01	2.396E+02	1.043E-01	2.396E+02
Tc-99	1.000E+00	0.000E+00	1.543E-01	1.620E+02	1.543E-01	1.620E+02
U-234	1.000E+00	0.000E+00	4.584E-02	5.454E+02	4.584E-02	5.454E+02
U-235	1.000E+00	0.000E+00	2.278E-01	1.097E+02	2.278E-01	1.097E+02
U-238	1.000E+00	0.000E+00	7.831E-02	3.192E+02	7.831E-02	3.192E+02

Summary : Hematite - Surface CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.133E-01	1.127E-01	1.115E-01	1.073E-01	9.596E-02	6.096E-02	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	2.226E-07	6.785E-07	1.542E-06	4.087E-06	8.329E-06	8.877E-06	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	1.441E+00	1.395E+00	1.307E+00	1.040E+00	5.393E-01	5.083E-02	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		1.441E+00	1.395E+00	1.307E+00	1.040E+00	5.393E-01	5.084E-02	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	1.211E-14	7.963E-14	3.988E-13	3.168E-12	1.977E-11	7.783E-11	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	1.089E-07	3.076E-07	6.805E-07	1.766E-06	3.482E-06	3.253E-06	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		1.089E-07	3.076E-07	6.805E-07	1.766E-06	3.482E-06	3.253E-06	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	3.114E-18	4.400E-17	4.912E-16	1.199E-14	2.408E-13	4.495E-12	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	3.751E-11	2.492E-10	1.264E-09	1.030E-08	6.860E-08	3.514E-07	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		3.751E-11	2.492E-10	1.264E-09	1.030E-08	6.860E-08	3.515E-07	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	1.044E-01	1.039E-01	1.029E-01	9.954E-02	9.007E-02	5.867E-02	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	1.114E-10	3.348E-10	7.779E-10	2.288E-09	6.260E-09	1.611E-08	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	2.278E-01	2.269E-01	2.250E-01	2.187E-01	2.011E-01	1.444E-01	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		2.278E-01	2.269E-01	2.250E-01	2.187E-01	2.011E-01	1.444E-01	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	4.795E-15	3.351E-14	1.754E-13	1.512E-12	1.140E-11	7.773E-11	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	1.466E-05	4.376E-05	1.010E-04	2.911E-04	7.510E-04	1.517E-03	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		1.466E-05	4.376E-05	1.010E-04	2.911E-04	7.510E-04	1.517E-03	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	3.058E-17	4.154E-16	4.520E-15	1.078E-13	2.101E-12	3.635E-11	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	1.192E-07	7.636E-07	3.792E-06	3.020E-05	1.934E-04	8.904E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		1.192E-07	7.636E-07	3.792E-06	3.020E-05	1.934E-04	8.904E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	5.164E-09	5.139E-09	5.091E-09	4.921E-09	4.446E-09	2.880E-09	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	1.043E-01	1.038E-01	1.028E-01	9.942E-02	8.982E-02	5.819E-02	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		1.043E-01	1.038E-01	1.028E-01	9.942E-02	8.982E-02	5.819E-02	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	6.204E-10	1.896E-09	4.407E-09	1.273E-08	3.271E-08	6.468E-08	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	2.857E-20	1.776E-19	8.775E-19	7.323E-18	5.462E-17	3.697E-16	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	1.858E-20	2.801E-19	3.123E-18	6.775E-17	1.005E-15	1.101E-14	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	1.113E-21	3.109E-20	6.516E-19	2.916E-17	6.606E-16	9.272E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.543E-01	1.527E-01	1.493E-01	1.382E-01	1.103E-01	4.626E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	4.584E-02	4.552E-02	4.488E-02	4.271E-02	3.688E-02	2.040E-02	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	6.490E-08	1.935E-07	4.453E-07	1.271E-06	3.189E-06	5.811E-06	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		4.584E-02	4.552E-02	4.488E-02	4.271E-02	3.688E-02	2.040E-02	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	1.002E-07	2.725E-07	6.089E-07	1.728E-06	4.447E-06	9.061E-06	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	1.021E-13	6.303E-13	3.109E-12	2.582E-11	1.899E-10	1.228E-09	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		1.002E-07	2.725E-07	6.089E-07	1.728E-06	4.448E-06	9.063E-06	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr								
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
Ra-226	U-234	1.000E+00	2.365E-09	1.682E-08	8.904E-08	7.814E-07	6.149E-06	4.941E-05	0.000E+00	0.000E+00	
Ra-226	U-238	9.999E-01	1.659E-15	2.536E-14	2.970E-13	7.719E-12	1.747E-10	4.482E-09	0.000E+00	0.000E+00	
Ra-226	ΣDOSE(j)		2.365E-09	1.682E-08	8.904E-08	7.814E-07	6.149E-06	4.942E-05	0.000E+00	0.000E+00	
Pb-210	U-234	1.000E+00	7.731E-12	8.882E-11	8.497E-10	1.834E-08	3.339E-07	4.912E-06	0.000E+00	0.000E+00	
Pb-210	U-238	9.999E-01	4.782E-18	1.124E-16	2.270E-15	1.414E-13	7.510E-12	3.774E-10	0.000E+00	0.000E+00	
Pb-210	ΣDOSE(j)		7.731E-12	8.882E-11	8.497E-10	1.834E-08	3.339E-07	4.912E-06	0.000E+00	0.000E+00	
U-238	U-238	5.400E-05	2.226E-06	2.211E-06	2.180E-06	2.074E-06	1.791E-06	9.900E-07	0.000E+00	0.000E+00	
U-238	U-238	9.999E-01	7.831E-02	7.788E-02	7.701E-02	7.404E-02	6.596E-02	4.177E-02	0.000E+00	0.000E+00	
U-238	ΣDOSE(j)		7.831E-02	7.788E-02	7.702E-02	7.404E-02	6.596E-02	4.177E-02	0.000E+00	0.000E+00	

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Summary : Hematite - Surface CSM

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.56 seconds

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Time = 1.000E+00	10
Time = 3.000E+00	11
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Summary : Hematite - Surface Ra-226+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 153375.00 square meters	Pb-210 1.000E+00
Thickness: 0.15 meters	Ra-226 1.000E+00
Cover Depth: 0.00 meters	

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.602E+00	4.588E+00	4.560E+00	4.459E+00	4.175E+00	3.142E+00	0.000E+00	0.000E+00
M(t):	1.841E-01	1.835E-01	1.824E-01	1.784E-01	1.670E-01	1.257E-01	0.000E+00	0.000E+00

Maximum TDOSE(t): 4.602E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.481E-03	0.0003	2.252E-04	0.0000	0.000E+00	0.0000	3.169E-01	0.0689	1.702E-01	0.0370	2.278E-01	0.0495	1.014E-01	0.0220
Ra-226	2.442E+00	0.5307	8.830E-05	0.0000	0.000E+00	0.0000	1.091E+00	0.2371	5.426E-02	0.0118	1.761E-01	0.0383	2.029E-02	0.0044
Total	2.444E+00	0.5310	3.135E-04	0.0001	0.000E+00	0.0000	1.408E+00	0.3060	2.245E-01	0.0488	4.039E-01	0.0878	1.217E-01	0.0265

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.180E-01	0.1777
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.784E+00	0.8223
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.602E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.434E-03	0.0003	2.172E-04	0.0000	0.000E+00	0.0000	3.055E-01	0.0666	1.641E-01	0.0358	2.196E-01	0.0479	9.781E-02	0.0213
Ra-226	2.438E+00	0.5314	9.476E-05	0.0000	0.000E+00	0.0000	1.096E+00	0.2390	5.923E-02	0.0129	1.823E-01	0.0397	2.329E-02	0.0051
Total	2.440E+00	0.5317	3.119E-04	0.0001	0.000E+00	0.0000	1.402E+00	0.3056	2.234E-01	0.0487	4.019E-01	0.0876	1.211E-01	0.0264

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.888E-01	0.1719
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.800E+00	0.8281
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.588E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.343E-03	0.0003	2.019E-04	0.0000	0.000E+00	0.0000	2.841E-01	0.0623	1.526E-01	0.0335	2.042E-01	0.0448	9.093E-02	0.0199
Ra-226	2.430E+00	0.5330	1.069E-04	0.0000	0.000E+00	0.0000	1.105E+00	0.2423	6.849E-02	0.0150	1.937E-01	0.0425	2.892E-02	0.0063
Total	2.432E+00	0.5333	3.088E-04	0.0001	0.000E+00	0.0000	1.389E+00	0.3046	2.211E-01	0.0485	3.979E-01	0.0873	1.198E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.333E-01	0.1608
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.826E+00	0.8392
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.560E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.068E-03	0.0002	1.563E-04	0.0000	0.000E+00	0.0000	2.200E-01	0.0493	1.182E-01	0.0265	1.581E-01	0.0355	7.041E-02	0.0158
Ra-226	2.402E+00	0.5386	1.416E-04	0.0000	0.000E+00	0.0000	1.123E+00	0.2519	9.511E-02	0.0213	2.261E-01	0.0507	4.516E-02	0.0101
Total	2.403E+00	0.5389	2.979E-04	0.0001	0.000E+00	0.0000	1.343E+00	0.3012	2.133E-01	0.0478	3.842E-01	0.0861	1.156E-01	0.0259

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.679E-01	0.1273
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.892E+00	0.8727
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.459E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.550E-04	0.0001	7.492E-05	0.0000	0.000E+00	0.0000	1.054E-01	0.0252	5.663E-02	0.0136	7.576E-02	0.0181	3.374E-02	0.0081
Ra-226	2.315E+00	0.5545	1.936E-04	0.0000	0.000E+00	0.0000	1.111E+00	0.2660	1.355E-01	0.0325	2.710E-01	0.0649	7.032E-02	0.0168
Total	2.315E+00	0.5547	2.685E-04	0.0001	0.000E+00	0.0000	1.216E+00	0.2913	1.922E-01	0.0460	3.467E-01	0.0831	1.041E-01	0.0249

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.722E-01	0.0652
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.902E+00	0.9348
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.175E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.488E-05	0.0000	5.275E-06	0.0000	0.000E+00	0.0000	7.422E-03	0.0024	3.987E-03	0.0013	5.334E-03	0.0017	2.376E-03	0.0008
Ra-226	1.924E+00	0.6125	1.700E-04	0.0001	0.000E+00	0.0000	7.899E-01	0.2514	1.214E-01	0.0387	2.213E-01	0.0705	6.548E-02	0.0208
Total	1.924E+00	0.6125	1.753E-04	0.0001	0.000E+00	0.0000	7.974E-01	0.2538	1.254E-01	0.0399	2.267E-01	0.0722	6.786E-02	0.0216

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.918E-02	0.0061
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.122E+00	0.9939
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.142E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	8.180E-01	7.888E-01	7.333E-01	5.679E-01	2.722E-01	1.918E-02	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	3.766E+00	3.756E+00	3.736E+00	3.665E+00	3.461E+00	2.676E+00	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	1.862E-02	4.397E-02	9.065E-02	2.262E-01	4.420E-01	4.463E-01	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		3.784E+00	3.800E+00	3.826E+00	3.892E+00	3.902E+00	3.122E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	3.056E+01	3.170E+01	3.409E+01	4.403E+01	9.185E+01	1.303E+03	*7.634E+13	*7.634E+13	
Ra-226	6.606E+00	6.580E+00	6.534E+00	6.424E+00	6.406E+00	8.006E+00	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	8.180E-01	3.056E+01	8.180E-01	3.056E+01
Ra-226	1.000E+00	20.50 ± 0.04	3.924E+00	6.372E+00	3.784E+00	6.606E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	8.180E-01	7.888E-01	7.333E-01	5.679E-01	2.722E-01	1.918E-02	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	1.862E-02	4.397E-02	9.065E-02	2.262E-01	4.420E-01	4.463E-01	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		8.366E-01	8.327E-01	8.239E-01	7.940E-01	7.141E-01	4.655E-01	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	3.766E+00	3.756E+00	3.736E+00	3.665E+00	3.461E+00	2.676E+00	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.14 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Summary : Hematite - Surface Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g	
Area: 153375.00 square meters	Ra-228	1.000E+00
Thickness: 0.15 meters	Th-228	1.000E+00
Cover Depth: 0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.031E+00	5.020E+00	4.999E+00	4.923E+00	4.700E+00	3.782E+00	0.000E+00	0.000E+00
M(t):	2.012E-01	2.008E-01	2.000E-01	1.969E-01	1.880E-01	1.513E-01	0.000E+00	0.000E+00

Maximum TDOSE(t): 5.031E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.582E+00	0.3145	5.739E-04	0.0001	0.000E+00	0.0000	1.120E+00	0.2227	5.360E-02	0.0107	1.774E-01	0.0353	2.102E-02	0.0042
Th-228	1.790E+00	0.3557	2.859E-03	0.0006	0.000E+00	0.0000	7.456E-03	0.0015	1.970E-03	0.0004	3.490E-04	0.0001	9.611E-03	0.0019
Th-232	9.091E-02	0.0181	1.621E-02	0.0032	0.000E+00	0.0000	9.461E-02	0.0188	1.071E-02	0.0021	1.175E-02	0.0023	3.993E-02	0.0079
Total	3.463E+00	0.6883	1.964E-02	0.0039	0.000E+00	0.0000	1.222E+00	0.2430	6.629E-02	0.0132	1.895E-01	0.0377	7.056E-02	0.0140

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.955E+00	0.5874
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.812E+00	0.3601
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.641E-01	0.0525
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.031E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.911E+00	0.3806	1.319E-03	0.0003	0.000E+00	0.0000	9.916E-01	0.1975	4.793E-02	0.0095	1.567E-01	0.0312	2.129E-02	0.0042
Th-228	1.244E+00	0.2478	1.982E-03	0.0004	0.000E+00	0.0000	5.169E-03	0.0010	1.365E-03	0.0003	2.419E-04	0.0000	6.663E-03	0.0013
Th-232	3.036E-01	0.0605	1.626E-02	0.0032	0.000E+00	0.0000	2.208E-01	0.0440	1.673E-02	0.0033	3.173E-02	0.0063	4.233E-02	0.0084
Total	3.458E+00	0.6888	1.956E-02	0.0039	0.000E+00	0.0000	1.218E+00	0.2425	6.602E-02	0.0132	1.887E-01	0.0376	7.028E-02	0.0140

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.130E+00	0.6234
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.259E+00	0.2509
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.314E-01	0.1258
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.020E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.058E+00	0.4116	1.916E-03	0.0004	0.000E+00	0.0000	7.751E-01	0.1551	3.796E-02	0.0076	1.223E-01	0.0245	1.957E-02	0.0039
Th-228	6.011E-01	0.1203	9.526E-04	0.0002	0.000E+00	0.0000	2.484E-03	0.0005	6.562E-04	0.0001	1.163E-04	0.0000	3.202E-03	0.0006
Th-232	7.907E-01	0.1582	1.654E-02	0.0033	0.000E+00	0.0000	4.300E-01	0.0860	2.687E-02	0.0054	6.479E-02	0.0130	4.693E-02	0.0094
Total	3.450E+00	0.6901	1.940E-02	0.0039	0.000E+00	0.0000	1.208E+00	0.2416	6.549E-02	0.0131	1.872E-01	0.0374	6.971E-02	0.0139

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.015E+00	0.6030
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.086E-01	0.1217
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.376E+00	0.2752
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.999E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.190E+00	0.2417	1.286E-03	0.0003	0.000E+00	0.0000	3.250E-01	0.0660	1.619E-02	0.0033	5.111E-02	0.0104	9.809E-03	0.0020
Th-228	4.714E-02	0.0096	7.327E-05	0.0000	0.000E+00	0.0000	1.911E-04	0.0000	5.047E-05	0.0000	8.943E-06	0.0000	2.463E-04	0.0001
Th-232	2.181E+00	0.4431	1.749E-02	0.0036	0.000E+00	0.0000	8.478E-01	0.1722	4.737E-02	0.0096	1.307E-01	0.0265	5.766E-02	0.0117
Total	3.418E+00	0.6943	1.885E-02	0.0038	0.000E+00	0.0000	1.173E+00	0.2383	6.361E-02	0.0129	1.818E-01	0.0369	6.772E-02	0.0138

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.593E+00	0.3236
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.771E-02	0.0097
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.282E+00	0.6667
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.923E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.097E-01	0.0233	1.146E-04	0.0000	0.000E+00	0.0000	2.670E-02	0.0057	1.335E-03	0.0003	4.198E-03	0.0009	8.354E-04	0.0002
Th-228	3.259E-05	0.0000	4.785E-08	0.0000	0.000E+00	0.0000	1.248E-07	0.0000	3.296E-08	0.0000	5.841E-09	0.0000	1.609E-07	0.0000
Th-232	3.212E+00	0.6833	1.716E-02	0.0037	0.000E+00	0.0000	1.048E+00	0.2230	5.694E-02	0.0121	1.624E-01	0.0345	6.121E-02	0.0130
Total	3.321E+00	0.7067	1.727E-02	0.0037	0.000E+00	0.0000	1.075E+00	0.2286	5.828E-02	0.0124	1.665E-01	0.0354	6.204E-02	0.0132

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.428E-01	0.0304
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.296E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.557E+00	0.9696
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.700E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.019E-05	0.0000	1.680E-08	0.0000	0.000E+00	0.0000	3.914E-06	0.0000	1.958E-07	0.0000	6.153E-07	0.0000	1.225E-07	0.0000
Th-228	2.678E-16	0.0000	3.149E-19	0.0000	0.000E+00	0.0000	8.213E-19	0.0000	2.170E-19	0.0000	3.844E-20	0.0000	1.059E-18	0.0000
Th-232	2.844E+00	0.7519	1.176E-02	0.0031	0.000E+00	0.0000	7.314E-01	0.1934	3.967E-02	0.0105	1.134E-01	0.0300	4.222E-02	0.0112
Total	2.844E+00	0.7519	1.176E-02	0.0031	0.000E+00	0.0000	7.314E-01	0.1934	3.967E-02	0.0105	1.134E-01	0.0300	4.223E-02	0.0112

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.506E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.702E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.782E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.782E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	2.614E+00	2.311E+00	1.806E+00	7.620E-01	6.451E-02	1.075E-05	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.412E-01	8.188E-01	1.209E+00	8.312E-01	7.834E-02	1.431E-05	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		2.955E+00	3.130E+00	3.015E+00	1.593E+00	1.428E-01	2.506E-05	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.812E+00	1.259E+00	6.086E-01	4.771E-02	3.296E-05	2.702E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	9.433E-02	9.395E-02	9.319E-02	9.054E-02	8.297E-02	5.651E-02	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	1.554E-01	4.506E-01	9.407E-01	1.933E+00	2.482E+00	1.971E+00	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	1.441E-02	8.689E-02	3.420E-01	1.258E+00	1.992E+00	1.755E+00	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		2.641E-01	6.314E-01	1.376E+00	3.282E+00	4.557E+00	3.782E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	8.460E+00	7.988E+00	8.293E+00	1.569E+01	1.750E+02	9.977E+05	*2.726E+14	*2.726E+14	
Th-228	1.380E+01	1.985E+01	4.108E+01	5.240E+02	7.585E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	9.465E+01	3.959E+01	1.817E+01	7.616E+00	5.486E+00	6.610E+00	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	1.458 ± 0.003	3.145E+00	7.948E+00	2.955E+00	8.460E+00
Th-228	1.000E+00	0.000E+00	1.812E+00	1.380E+01	1.812E+00	1.380E+01
Th-232	1.000E+00	33.35 ± 0.07	4.567E+00	5.474E+00	2.641E-01	9.465E+01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	2.614E+00	2.311E+00	1.806E+00	7.620E-01	6.451E-02	1.075E-05	0.000E+00	0.000E+00
Ra-228	Th-232	1.000E+00	1.554E-01	4.506E-01	9.407E-01	1.933E+00	2.482E+00	1.971E+00	0.000E+00	0.000E+00
Ra-228	ΣDOSE(j)		2.769E+00	2.761E+00	2.747E+00	2.695E+00	2.546E+00	1.971E+00	0.000E+00	0.000E+00
Th-228	Ra-228	1.000E+00	3.412E-01	8.188E-01	1.209E+00	8.312E-01	7.834E-02	1.431E-05	0.000E+00	0.000E+00
Th-228	Th-228	1.000E+00	1.812E+00	1.259E+00	6.086E-01	4.771E-02	3.296E-05	2.702E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.441E-02	8.689E-02	3.420E-01	1.258E+00	1.992E+00	1.755E+00	0.000E+00	0.000E+00
Th-228	ΣDOSE(j)		2.167E+00	2.165E+00	2.159E+00	2.137E+00	2.071E+00	1.755E+00	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	9.433E-02	9.395E-02	9.319E-02	9.054E-02	8.297E-02	5.651E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t = 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01	9.886E-01
Ra-228	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01	9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.61 seconds

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Attachment 4 to HEM-11-91

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Root CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Root CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Root CSM

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Root CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Root CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Root CSM

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root CSM

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Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g	
Area: 153375.00 square meters	Am-241	1.000E+00
Thickness: 1.35 meters	Np-237	1.000E+00
Cover Depth: 0.15 meters	Pu-239	1.000E+00
	Pu-240	1.000E+00
	Tc-99	1.000E+00
	U-234	1.000E+00
	U-235	1.000E+00
	U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.543E+00	6.533E+00	6.514E+00	6.448E+00	6.264E+00	5.691E+00	4.486E+00	1.828E+00
M(t):	2.617E-01	2.613E-01	2.606E-01	2.579E-01	2.505E-01	2.276E-01	1.794E-01	7.311E-02

Maximum TDOSE(t): 6.543E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Root CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.351E-06	0.0000	8.771E-06	0.0000	0.000E+00	0.0000	2.016E-01	0.0308	1.278E-04	0.0000	1.423E-05	0.0000	1.032E-04	0.0000
Np-237	1.216E-02	0.0019	1.066E-05	0.0000	0.000E+00	0.0000	4.919E+00	0.7518	5.795E-02	0.0089	1.561E-03	0.0002	1.259E-04	0.0000
Pu-239	1.956E-06	0.0000	8.483E-06	0.0000	0.000E+00	0.0000	1.962E-01	0.0300	2.488E-04	0.0000	6.857E-06	0.0000	1.005E-04	0.0000
Pu-240	4.434E-08	0.0000	8.483E-06	0.0000	0.000E+00	0.0000	1.962E-01	0.0300	2.488E-04	0.0000	6.857E-06	0.0000	1.005E-04	0.0000
Tc-99	1.195E-07	0.0000	1.644E-10	0.0000	0.000E+00	0.0000	7.500E-01	0.1146	8.709E-04	0.0001	2.365E-02	0.0036	4.143E-08	0.0000
U-234	5.408E-07	0.0000	2.610E-06	0.0000	0.000E+00	0.0000	5.804E-02	0.0089	9.043E-04	0.0001	1.134E-03	0.0002	8.033E-06	0.0000
U-235	5.221E-03	0.0008	2.432E-06	0.0000	0.000E+00	0.0000	5.489E-02	0.0084	8.543E-04	0.0001	1.071E-03	0.0002	7.593E-06	0.0000
U-238	3.041E-03	0.0005	2.334E-06	0.0000	0.000E+00	0.0000	5.511E-02	0.0084	8.586E-04	0.0001	1.076E-03	0.0002	7.627E-06	0.0000
Total	2.042E-02	0.0031	4.377E-05	0.0000	0.000E+00	0.0000	6.432E+00	0.9830	6.207E-02	0.0095	2.852E-02	0.0044	4.534E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.019E-01	0.0309
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.991E+00	0.7628
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.966E-01	0.0300
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.966E-01	0.0300
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.746E-01	0.1184
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.009E-02	0.0092
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.205E-02	0.0095
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.009E-02	0.0092
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.543E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.457E-06	0.0000	2.627E-05	0.0000	0.000E+00	0.0000	2.015E-01	0.0308	1.489E-04	0.0000	1.727E-05	0.0000	3.093E-04	0.0000
Np-237	1.226E-02	0.0019	3.188E-05	0.0000	0.000E+00	0.0000	4.907E+00	0.7511	5.833E-02	0.0089	1.576E-03	0.0002	3.766E-04	0.0001
Pu-239	1.982E-06	0.0000	2.545E-05	0.0000	0.000E+00	0.0000	1.964E-01	0.0301	2.902E-04	0.0000	8.331E-06	0.0000	3.015E-04	0.0000
Pu-240	4.532E-08	0.0000	2.544E-05	0.0000	0.000E+00	0.0000	1.964E-01	0.0301	2.901E-04	0.0000	8.330E-06	0.0000	3.014E-04	0.0000
Tc-99	1.220E-07	0.0000	4.930E-10	0.0000	0.000E+00	0.0000	7.500E-01	0.1148	8.710E-04	0.0001	2.365E-02	0.0036	1.242E-07	0.0000
U-234	5.528E-07	0.0000	7.827E-06	0.0000	0.000E+00	0.0000	5.807E-02	0.0089	9.475E-04	0.0001	1.205E-03	0.0002	2.409E-05	0.0000
U-235	5.293E-03	0.0008	7.296E-06	0.0000	0.000E+00	0.0000	5.504E-02	0.0084	8.952E-04	0.0001	1.139E-03	0.0002	2.279E-05	0.0000
U-238	3.068E-03	0.0005	6.999E-06	0.0000	0.000E+00	0.0000	5.513E-02	0.0084	8.997E-04	0.0001	1.144E-03	0.0002	2.288E-05	0.0000
Total	2.063E-02	0.0032	1.312E-04	0.0000	0.000E+00	0.0000	6.420E+00	0.9826	6.267E-02	0.0096	2.875E-02	0.0044	1.359E-03	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.020E-01	0.0309
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.980E+00	0.7622
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.970E-01	0.0302
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.970E-01	0.0301
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.746E-01	0.1186
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.025E-02	0.0092
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.240E-02	0.0096
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.028E-02	0.0092
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.533E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.680E-06	0.0000	6.111E-05	0.0000	0.000E+00	0.0000	2.011E-01	0.0309	1.910E-04	0.0000	2.330E-05	0.0000	7.193E-04	0.0001
Np-237	1.248E-02	0.0019	7.390E-05	0.0000	0.000E+00	0.0000	4.883E+00	0.7497	5.907E-02	0.0091	1.605E-03	0.0002	8.731E-04	0.0001
Pu-239	2.037E-06	0.0000	5.937E-05	0.0000	0.000E+00	0.0000	1.967E-01	0.0302	3.733E-04	0.0001	1.128E-05	0.0000	7.033E-04	0.0001
Pu-240	4.735E-08	0.0000	5.935E-05	0.0000	0.000E+00	0.0000	1.966E-01	0.0302	3.732E-04	0.0001	1.127E-05	0.0000	7.031E-04	0.0001
Tc-99	1.272E-07	0.0000	1.149E-09	0.0000	0.000E+00	0.0000	7.501E-01	0.1151	8.711E-04	0.0001	2.366E-02	0.0036	2.894E-07	0.0000
U-234	5.817E-07	0.0000	1.825E-05	0.0000	0.000E+00	0.0000	5.812E-02	0.0089	1.034E-03	0.0002	1.348E-03	0.0002	5.618E-05	0.0000
U-235	5.441E-03	0.0008	1.702E-05	0.0000	0.000E+00	0.0000	5.534E-02	0.0085	9.772E-04	0.0002	1.274E-03	0.0002	5.324E-05	0.0000
U-238	3.123E-03	0.0005	1.632E-05	0.0000	0.000E+00	0.0000	5.519E-02	0.0085	9.821E-04	0.0002	1.280E-03	0.0002	5.334E-05	0.0000
Total	2.105E-02	0.0032	3.053E-04	0.0000	0.000E+00	0.0000	6.397E+00	0.9819	6.387E-02	0.0098	2.921E-02	0.0045	3.162E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.021E-01	0.0310
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.958E+00	0.7610
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.978E-01	0.0304
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.977E-01	0.0304
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.746E-01	0.1189
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.058E-02	0.0093
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.311E-02	0.0097
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.064E-02	0.0093
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.514E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.572E-06	0.0000	1.813E-04	0.0000	0.000E+00	0.0000	2.000E-01	0.0310	3.362E-04	0.0001	4.413E-05	0.0000	2.134E-03	0.0003
Np-237	1.328E-02	0.0021	2.168E-04	0.0000	0.000E+00	0.0000	4.801E+00	0.7445	6.158E-02	0.0096	1.703E-03	0.0003	2.561E-03	0.0004
Pu-239	2.240E-06	0.0000	1.780E-04	0.0000	0.000E+00	0.0000	1.976E-01	0.0306	6.640E-04	0.0001	2.158E-05	0.0000	2.109E-03	0.0003
Pu-240	5.521E-08	0.0000	1.778E-04	0.0000	0.000E+00	0.0000	1.975E-01	0.0306	6.634E-04	0.0001	2.157E-05	0.0000	2.107E-03	0.0003
Tc-99	1.469E-07	0.0000	3.427E-09	0.0000	0.000E+00	0.0000	7.502E-01	0.1164	8.713E-04	0.0001	2.366E-02	0.0037	8.635E-07	0.0000
U-234	7.390E-07	0.0000	5.464E-05	0.0000	0.000E+00	0.0000	5.831E-02	0.0090	1.337E-03	0.0002	1.848E-03	0.0003	1.682E-04	0.0000
U-235	5.991E-03	0.0009	5.111E-05	0.0000	0.000E+00	0.0000	5.643E-02	0.0088	1.263E-03	0.0002	1.746E-03	0.0003	1.605E-04	0.0000
U-238	3.325E-03	0.0005	4.885E-05	0.0000	0.000E+00	0.0000	5.537E-02	0.0086	1.270E-03	0.0002	1.755E-03	0.0003	1.597E-04	0.0000
Total	2.260E-02	0.0035	9.085E-04	0.0001	0.000E+00	0.0000	6.316E+00	0.9796	6.798E-02	0.0105	3.080E-02	0.0048	9.399E-03	0.0015

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.027E-01	0.0314
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.880E+00	0.7569
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.006E-01	0.0311
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.004E-01	0.0311
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.747E-01	0.1202
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.172E-02	0.0096
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.564E-02	0.0102
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.192E-02	0.0096
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.448E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.428E-06	0.0000	5.099E-04	0.0001	0.000E+00	0.0000	1.968E-01	0.0314	7.332E-04	0.0001	1.011E-04	0.0000	6.001E-03	0.0010
Np-237	1.584E-02	0.0025	5.901E-04	0.0001	0.000E+00	0.0000	4.571E+00	0.7297	6.797E-02	0.0109	1.957E-03	0.0003	6.971E-03	0.0011
Pu-239	2.941E-06	0.0000	5.160E-04	0.0001	0.000E+00	0.0000	2.004E-01	0.0320	1.492E-03	0.0002	5.095E-05	0.0000	6.113E-03	0.0010
Pu-240	8.561E-08	0.0000	5.148E-04	0.0001	0.000E+00	0.0000	1.999E-01	0.0319	1.489E-03	0.0002	5.083E-05	0.0000	6.098E-03	0.0010
Tc-99	2.219E-07	0.0000	9.803E-09	0.0000	0.000E+00	0.0000	7.504E-01	0.1198	8.719E-04	0.0001	2.368E-02	0.0038	2.470E-06	0.0000
U-234	1.780E-06	0.0000	1.577E-04	0.0000	0.000E+00	0.0000	5.886E-02	0.0094	2.195E-03	0.0004	3.263E-03	0.0005	4.854E-04	0.0001
U-235	7.893E-03	0.0013	1.497E-04	0.0000	0.000E+00	0.0000	5.965E-02	0.0095	2.074E-03	0.0003	3.084E-03	0.0005	4.761E-04	0.0001
U-238	3.975E-03	0.0006	1.410E-04	0.0000	0.000E+00	0.0000	5.588E-02	0.0089	2.084E-03	0.0003	3.099E-03	0.0005	4.607E-04	0.0001
Total	2.772E-02	0.0044	2.579E-03	0.0004	0.000E+00	0.0000	6.092E+00	0.9727	7.891E-02	0.0126	3.529E-02	0.0056	2.661E-02	0.0042

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.041E-01	0.0326
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.664E+00	0.7446
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.085E-01	0.0333
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.080E-01	0.0332
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.750E-01	0.1237
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.496E-02	0.0104
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.332E-02	0.0117
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.564E-02	0.0105
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.264E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.915E-05	0.0000	1.501E-03	0.0003	0.000E+00	0.0000	1.855E-01	0.0326	1.930E-03	0.0003	2.727E-04	0.0000	1.766E-02	0.0031
Np-237	2.946E-02	0.0052	1.550E-03	0.0003	0.000E+00	0.0000	3.842E+00	0.6751	8.279E-02	0.0145	2.567E-03	0.0005	1.831E-02	0.0032
Pu-239	7.616E-06	0.0000	1.689E-03	0.0003	0.000E+00	0.0000	2.099E-01	0.0369	4.366E-03	0.0008	1.528E-04	0.0000	2.001E-02	0.0035
Pu-240	3.974E-07	0.0000	1.676E-03	0.0003	0.000E+00	0.0000	2.083E-01	0.0366	4.332E-03	0.0008	1.517E-04	0.0000	1.985E-02	0.0035
Tc-99	9.401E-07	0.0000	3.060E-08	0.0000	0.000E+00	0.0000	7.498E-01	0.1317	8.722E-04	0.0002	2.370E-02	0.0042	7.709E-06	0.0000
U-234	1.877E-05	0.0000	5.085E-04	0.0001	0.000E+00	0.0000	6.078E-02	0.0107	5.108E-03	0.0009	8.073E-03	0.0014	1.565E-03	0.0003
U-235	2.078E-02	0.0037	5.226E-04	0.0001	0.000E+00	0.0000	7.182E-02	0.0126	4.832E-03	0.0008	7.632E-03	0.0013	1.725E-03	0.0003
U-238	7.487E-03	0.0013	4.539E-04	0.0001	0.000E+00	0.0000	5.759E-02	0.0101	4.850E-03	0.0009	7.664E-03	0.0013	1.484E-03	0.0003
Total	5.783E-02	0.0102	7.900E-03	0.0014	0.000E+00	0.0000	5.385E+00	0.9463	1.091E-01	0.0192	5.021E-02	0.0088	8.061E-02	0.0142

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.069E-01	0.0364
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.977E+00	0.6987
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.361E-01	0.0415
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.343E-01	0.0412
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.743E-01	0.1361
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.605E-02	0.0134
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.073E-01	0.0189
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.953E-02	0.0140
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.691E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.791E-03	0.0015	2.704E-03	0.0006	0.000E+00	0.0000	1.494E-01	0.0333	3.375E-03	0.0008	4.798E-04	0.0001	3.182E-02	0.0071
Np-237	1.033E-01	0.0230	2.017E-03	0.0004	0.000E+00	0.0000	2.232E+00	0.4975	7.528E-02	0.0168	2.478E-03	0.0006	2.382E-02	0.0053
Pu-239	7.167E-05	0.0000	4.120E-03	0.0009	0.000E+00	0.0000	2.287E-01	0.0510	1.033E-02	0.0023	3.641E-04	0.0001	4.881E-02	0.0109
Pu-240	3.503E-05	0.0000	4.026E-03	0.0009	0.000E+00	0.0000	2.234E-01	0.0498	1.009E-02	0.0022	3.559E-04	0.0001	4.769E-02	0.0106
Tc-99	2.494E-05	0.0000	6.522E-08	0.0000	0.000E+00	0.0000	7.135E-01	0.1591	8.320E-04	0.0002	2.262E-02	0.0050	1.643E-05	0.0000
U-234	5.424E-04	0.0001	1.189E-03	0.0003	0.000E+00	0.0000	6.438E-02	0.0144	1.074E-02	0.0024	1.738E-02	0.0039	3.670E-03	0.0008
U-235	1.743E-01	0.0388	1.534E-03	0.0003	0.000E+00	0.0000	1.071E-01	0.0239	1.017E-02	0.0023	1.640E-02	0.0037	5.466E-03	0.0012
U-238	3.409E-02	0.0076	1.057E-03	0.0002	0.000E+00	0.0000	5.989E-02	0.0134	1.017E-02	0.0023	1.645E-02	0.0037	3.455E-03	0.0008
Total	3.191E-01	0.0711	1.665E-02	0.0037	0.000E+00	0.0000	3.778E+00	0.8422	1.310E-01	0.0292	7.653E-02	0.0171	1.648E-01	0.0367

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.945E-01	0.0434
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.438E+00	0.5436
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.924E-01	0.0652
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.856E-01	0.0637
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.370E-01	0.1643
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.790E-02	0.0218
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.149E-01	0.0702
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.251E-01	0.0279
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.486E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.200E-03	0.0012	8.739E-04	0.0005	0.000E+00	0.0000	4.835E-02	0.0265	1.094E-03	0.0006	1.552E-04	0.0001	1.029E-02	0.0056
Np-237	1.071E-02	0.0059	2.114E-04	0.0001	0.000E+00	0.0000	2.308E-01	0.1263	7.795E-03	0.0043	2.747E-04	0.0002	2.471E-03	0.0014
Pu-239	6.707E-05	0.0000	3.850E-03	0.0021	0.000E+00	0.0000	2.136E-01	0.1169	9.648E-03	0.0053	3.402E-04	0.0002	4.561E-02	0.0250
Pu-240	3.101E-05	0.0000	3.564E-03	0.0019	0.000E+00	0.0000	1.977E-01	0.1082	8.931E-03	0.0049	3.153E-04	0.0002	4.222E-02	0.0231
Tc-99	1.452E-05	0.0000	3.797E-08	0.0000	0.000E+00	0.0000	4.153E-01	0.2272	4.843E-04	0.0003	1.317E-02	0.0072	9.566E-06	0.0000
U-234	4.246E-03	0.0023	9.586E-04	0.0005	0.000E+00	0.0000	6.266E-02	0.0343	8.913E-03	0.0049	1.455E-02	0.0080	3.108E-03	0.0017
U-235	1.451E-01	0.0794	2.216E-03	0.0012	0.000E+00	0.0000	1.865E-01	0.1020	8.197E-03	0.0045	1.313E-02	0.0072	8.889E-03	0.0049
U-238	2.702E-02	0.0148	8.399E-04	0.0005	0.000E+00	0.0000	4.757E-02	0.0260	8.078E-03	0.0044	1.306E-02	0.0071	2.745E-03	0.0015
Total	1.893E-01	0.1036	1.251E-02	0.0068	0.000E+00	0.0000	1.402E+00	0.7673	5.314E-02	0.0291	5.499E-02	0.0301	1.153E-01	0.0631

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.296E-02	0.0344
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.522E-01	0.1380
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.731E-01	0.1494
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.528E-01	0.1383
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.289E-01	0.2347
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.444E-02	0.0517
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.640E-01	0.1991
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.932E-02	0.0543
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.828E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM

June 21, 2011

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.019E-01	2.020E-01	2.021E-01	2.027E-01	2.041E-01	2.067E-01	1.942E-01	6.276E-02
Am-241	Np-237+D	1.000E+00	7.600E-07	2.369E-06	5.583E-06	1.669E-05	4.719E-05	1.406E-04	3.061E-04	2.055E-04
Am-241	U-233	1.000E+00	2.069E-14	1.215E-13	5.853E-13	4.997E-12	4.229E-11	4.839E-10	4.193E-09	1.614E-08
Am-241	Th-229+D	1.000E+00	1.978E-18	2.444E-17	2.614E-16	6.695E-15	1.676E-13	6.927E-12	3.118E-10	5.192E-09
Am-241	ΣDSR (j)		2.019E-01	2.020E-01	2.021E-01	2.027E-01	2.041E-01	2.069E-01	1.945E-01	6.296E-02
Np-237+D	Np-237+D	1.000E+00	4.991E+00	4.980E+00	4.958E+00	4.880E+00	4.664E+00	3.977E+00	2.438E+00	2.521E-01
Np-237+D	U-233	1.000E+00	1.733E-07	4.455E-07	9.847E-07	2.892E-06	8.506E-06	2.957E-05	8.598E-05	1.103E-04
Np-237+D	Th-229+D	1.000E+00	2.222E-11	1.335E-10	6.662E-10	5.856E-09	5.090E-08	6.448E-07	9.977E-06	5.712E-05
Np-237+D	ΣDSR (j)		4.991E+00	4.980E+00	4.958E+00	4.880E+00	4.664E+00	3.977E+00	2.438E+00	2.522E-01
Pu-239	Pu-239	1.000E+00	1.966E-01	1.970E-01	1.978E-01	2.006E-01	2.085E-01	2.361E-01	2.924E-01	2.731E-01
Pu-239	U-235+D	1.000E+00	2.917E-11	9.044E-11	2.146E-10	6.642E-10	2.086E-09	9.245E-09	8.028E-08	2.305E-07
Pu-239	Pa-231	1.000E+00	1.922E-14	1.394E-13	7.487E-13	6.784E-12	5.820E-11	6.647E-10	6.507E-09	6.435E-08
Pu-239	Ac-227+D	1.000E+00	4.753E-17	5.269E-16	4.981E-15	1.112E-13	2.346E-12	6.392E-11	1.301E-09	1.486E-08
Pu-239	ΣDSR (j)		1.966E-01	1.970E-01	1.978E-01	2.006E-01	2.085E-01	2.361E-01	2.924E-01	2.731E-01
Pu-240	Pu-240	4.950E-08	9.732E-09	9.751E-09	9.788E-09	9.921E-09	1.030E-08	1.160E-08	1.414E-08	1.251E-08
Pu-240	Pu-240	1.000E+00	1.966E-01	1.970E-01	1.977E-01	2.004E-01	2.080E-01	2.343E-01	2.856E-01	2.528E-01
Pu-240	U-236	1.000E+00	8.041E-10	2.498E-09	5.922E-09	1.820E-08	5.582E-08	2.162E-07	8.303E-07	2.317E-06
Pu-240	Th-232	1.000E+00	4.611E-20	2.871E-19	1.437E-18	1.263E-17	1.101E-16	1.368E-15	1.536E-14	1.515E-13
Pu-240	Ra-228+D	1.000E+00	3.938E-20	6.204E-19	7.115E-18	1.611E-16	2.646E-15	4.378E-14	5.383E-13	5.520E-12
Pu-240	Th-228+D	1.000E+00	4.692E-22	1.041E-20	1.860E-19	7.778E-18	1.996E-16	5.362E-15	1.540E-13	1.600E-12
Pu-240	ΣDSR (j)		1.966E-01	1.970E-01	1.977E-01	2.004E-01	2.080E-01	2.343E-01	2.856E-01	2.528E-01
Tc-99	Tc-99	1.000E+00	7.746E-01	7.746E-01	7.746E-01	7.747E-01	7.750E-01	7.743E-01	7.370E-01	4.289E-01
U-234	U-234	1.000E+00	6.009E-02	6.025E-02	6.058E-02	6.172E-02	6.494E-02	7.586E-02	9.586E-02	7.581E-02
U-234	Th-230	1.000E+00	1.593E-07	4.345E-07	9.846E-07	2.950E-06	8.905E-06	3.365E-05	1.270E-04	3.761E-04
U-234	Ra-226+D	1.000E+00	3.526E-09	2.619E-08	1.422E-07	1.299E-06	1.125E-05	1.336E-04	1.586E-03	1.468E-02
U-234	Pb-210+D	1.000E+00	2.588E-11	2.574E-10	2.157E-09	4.295E-08	8.538E-07	2.177E-05	3.331E-04	3.568E-03
U-234	ΣDSR (j)		6.009E-02	6.025E-02	6.058E-02	6.172E-02	6.496E-02	7.605E-02	9.790E-02	9.444E-02
U-235+D	U-235+D	1.000E+00	6.199E-02	6.221E-02	6.267E-02	6.429E-02	6.923E-02	9.232E-02	2.618E-01	2.075E-01
U-235+D	Pa-231	1.000E+00	5.990E-05	1.842E-04	4.338E-04	1.313E-03	3.873E-03	1.339E-02	4.353E-02	1.264E-01
U-235+D	Ac-227+D	1.000E+00	1.710E-07	8.946E-07	3.976E-06	3.058E-05	2.157E-04	1.600E-03	9.597E-03	3.013E-02
U-235+D	ΣDSR (j)		6.205E-02	6.240E-02	6.311E-02	6.564E-02	7.332E-02	1.073E-01	3.149E-01	3.640E-01
U-238	U-238	5.400E-05	2.924E-06	2.932E-06	2.948E-06	3.003E-06	3.160E-06	3.692E-06	4.664E-06	3.696E-06
U-238+D	U-238+D	9.999E-01	6.009E-02	6.027E-02	6.064E-02	6.192E-02	6.563E-02	7.950E-02	1.250E-01	9.908E-02
U-238+D	U-234	9.999E-01	8.521E-08	2.562E-07	6.011E-07	1.837E-06	5.615E-06	2.162E-05	8.169E-05	2.153E-04
U-238+D	Th-230	9.999E-01	1.632E-13	1.009E-12	5.041E-12	4.429E-11	3.855E-10	4.773E-09	5.324E-08	5.050E-07
U-238+D	Ra-226+D	9.999E-01	2.421E-15	3.901E-14	4.722E-13	1.286E-11	3.237E-10	1.266E-08	4.478E-07	1.362E-05
U-238+D	Pb-210+D	9.999E-01	1.664E-17	3.429E-16	6.048E-15	3.409E-13	1.961E-11	1.742E-09	8.626E-08	3.213E-06
U-238+D	ΣDSR (j)		6.009E-02	6.027E-02	6.064E-02	6.192E-02	6.563E-02	7.952E-02	1.251E-01	9.932E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Root CSM

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		1.238E+02	1.238E+02	1.237E+02	1.233E+02	1.225E+02	1.208E+02	1.285E+02	3.971E+02
Np-237		5.009E+00	5.020E+00	5.043E+00	5.123E+00	5.360E+00	6.287E+00	1.025E+01	9.912E+01
Pu-239		1.272E+02	1.269E+02	1.264E+02	1.246E+02	1.199E+02	1.059E+02	8.551E+01	9.153E+01
Pu-240		1.272E+02	1.269E+02	1.264E+02	1.247E+02	1.202E+02	1.067E+02	8.753E+01	9.890E+01
Tc-99		3.228E+01	3.228E+01	3.227E+01	3.227E+01	3.226E+01	3.229E+01	3.392E+01	5.828E+01
U-234		4.161E+02	4.149E+02	4.127E+02	4.050E+02	3.849E+02	3.287E+02	2.554E+02	2.647E+02
U-235		4.029E+02	4.007E+02	3.962E+02	3.809E+02	3.410E+02	2.330E+02	7.938E+01	6.868E+01
U-238		4.160E+02	4.148E+02	4.123E+02	4.037E+02	3.809E+02	3.144E+02	1.998E+02	2.517E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	249.7 ± 0.5	2.109E-01	1.185E+02	2.019E-01	1.238E+02
Np-237	1.000E+00	0.000E+00	4.991E+00	5.009E+00	4.991E+00	5.009E+00
Pu-239	1.000E+00	249.9 ± 0.5	2.938E-01	8.510E+01	1.966E-01	1.272E+02
Pu-240	1.000E+00	250.0 ± 0.5	2.881E-01	8.677E+01	1.966E-01	1.272E+02
Tc-99	1.000E+00	44.94 ± 0.09	7.750E-01	3.226E+01	7.746E-01	3.228E+01
U-234	1.000E+00	249.8 ± 0.5	9.892E-02	2.527E+02	6.009E-02	4.161E+02
U-235	1.000E+00	1.000E+03	3.640E-01	6.868E+01	6.205E-02	4.029E+02
U-238	1.000E+00	249.9 ± 0.5	1.272E-01	1.966E+02	6.009E-02	4.160E+02

Summary : Hematite - Root CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.019E-01	2.020E-01	2.021E-01	2.027E-01	2.041E-01	2.067E-01	1.942E-01	6.276E-02
Np-237	Am-241	1.000E+00	7.600E-07	2.369E-06	5.583E-06	1.669E-05	4.719E-05	1.406E-04	3.061E-04	2.055E-04
Np-237	Np-237	1.000E+00	4.991E+00	4.980E+00	4.958E+00	4.880E+00	4.664E+00	3.977E+00	2.438E+00	2.521E-01
Np-237	ΣDOSE (j)		4.991E+00	4.980E+00	4.958E+00	4.880E+00	4.664E+00	3.977E+00	2.439E+00	2.523E-01
U-233	Am-241	1.000E+00	2.069E-14	1.215E-13	5.853E-13	4.997E-12	4.229E-11	4.839E-10	4.193E-09	1.614E-08
U-233	Np-237	1.000E+00	1.733E-07	4.455E-07	9.847E-07	2.892E-06	8.506E-06	2.957E-05	8.598E-05	1.103E-04
U-233	ΣDOSE (j)		1.733E-07	4.455E-07	9.847E-07	2.892E-06	8.506E-06	2.957E-05	8.598E-05	1.103E-04
Th-229	Am-241	1.000E+00	1.978E-18	2.444E-17	2.614E-16	6.695E-15	1.676E-13	6.927E-12	3.118E-10	5.192E-09
Th-229	Np-237	1.000E+00	2.222E-11	1.335E-10	6.662E-10	5.856E-09	5.090E-08	6.448E-07	9.977E-06	5.712E-05
Th-229	ΣDOSE (j)		2.222E-11	1.335E-10	6.662E-10	5.856E-09	5.090E-08	6.448E-07	9.978E-06	5.712E-05
Pu-239	Pu-239	1.000E+00	1.966E-01	1.970E-01	1.978E-01	2.006E-01	2.085E-01	2.361E-01	2.924E-01	2.731E-01
U-235	Pu-239	1.000E+00	2.917E-11	9.044E-11	2.146E-10	6.642E-10	2.086E-09	9.245E-09	8.028E-08	2.305E-07
U-235	U-235	1.000E+00	6.199E-02	6.221E-02	6.267E-02	6.429E-02	6.923E-02	9.232E-02	2.618E-01	2.075E-01
U-235	ΣDOSE (j)		6.199E-02	6.221E-02	6.267E-02	6.429E-02	6.923E-02	9.232E-02	2.618E-01	2.075E-01
Pa-231	Pu-239	1.000E+00	1.922E-14	1.394E-13	7.487E-13	6.784E-12	5.820E-11	6.647E-10	6.507E-09	6.435E-08
Pa-231	U-235	1.000E+00	5.990E-05	1.842E-04	4.338E-04	1.313E-03	3.873E-03	1.339E-02	4.353E-02	1.264E-01
Pa-231	ΣDOSE (j)		5.990E-05	1.842E-04	4.338E-04	1.313E-03	3.873E-03	1.339E-02	4.353E-02	1.264E-01
Ac-227	Pu-239	1.000E+00	4.753E-17	5.269E-16	4.981E-15	1.112E-13	2.346E-12	6.392E-11	1.301E-09	1.486E-08
Ac-227	U-235	1.000E+00	1.710E-07	8.946E-07	3.976E-06	3.058E-05	2.157E-04	1.600E-03	9.597E-03	3.013E-02
Ac-227	ΣDOSE (j)		1.710E-07	8.946E-07	3.976E-06	3.058E-05	2.157E-04	1.600E-03	9.597E-03	3.013E-02
Pu-240	Pu-240	4.950E-08	9.732E-09	9.751E-09	9.788E-09	9.921E-09	1.030E-08	1.160E-08	1.414E-08	1.251E-08
Pu-240	Pu-240	1.000E+00	1.966E-01	1.970E-01	1.977E-01	2.004E-01	2.080E-01	2.343E-01	2.856E-01	2.528E-01
Pu-240	ΣDOSE (j)		1.966E-01	1.970E-01	1.977E-01	2.004E-01	2.080E-01	2.343E-01	2.856E-01	2.528E-01
U-236	Pu-240	1.000E+00	8.041E-10	2.498E-09	5.922E-09	1.820E-08	5.582E-08	2.162E-07	8.303E-07	2.317E-06
Th-232	Pu-240	1.000E+00	4.611E-20	2.871E-19	1.437E-18	1.263E-17	1.101E-16	1.368E-15	1.536E-14	1.515E-13
Ra-228	Pu-240	1.000E+00	3.938E-20	6.204E-19	7.115E-18	1.611E-16	2.646E-15	4.378E-14	5.383E-13	5.520E-12
Th-228	Pu-240	1.000E+00	4.692E-22	1.041E-20	1.860E-19	7.778E-18	1.996E-16	5.362E-15	1.540E-13	1.600E-12
Tc-99	Tc-99	1.000E+00	7.746E-01	7.746E-01	7.746E-01	7.747E-01	7.750E-01	7.743E-01	7.370E-01	4.289E-01
U-234	U-234	1.000E+00	6.009E-02	6.025E-02	6.058E-02	6.172E-02	6.494E-02	7.586E-02	9.586E-02	7.581E-02
U-234	U-238	9.999E-01	8.521E-08	2.562E-07	6.011E-07	1.837E-06	5.615E-06	2.162E-05	8.169E-05	2.153E-04
U-234	ΣDOSE (j)		6.009E-02	6.025E-02	6.058E-02	6.172E-02	6.494E-02	7.588E-02	9.594E-02	7.603E-02
Th-230	U-234	1.000E+00	1.593E-07	4.345E-07	9.846E-07	2.950E-06	8.905E-06	3.365E-05	1.270E-04	3.761E-04
Th-230	U-238	9.999E-01	1.632E-13	1.009E-12	5.041E-12	4.429E-11	3.855E-10	4.773E-09	5.324E-08	5.050E-07
Th-230	ΣDOSE (j)		1.593E-07	4.345E-07	9.846E-07	2.950E-06	8.905E-06	3.366E-05	1.271E-04	3.766E-04

Summary : Hematite - Root CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	3.526E-09	2.619E-08	1.422E-07	1.299E-06	1.125E-05	1.336E-04	1.586E-03	1.468E-02
Ra-226	U-238	9.999E-01	2.421E-15	3.901E-14	4.722E-13	1.286E-11	3.237E-10	1.266E-08	4.478E-07	1.362E-05
Ra-226	ΣDOSE(j)		3.526E-09	2.619E-08	1.422E-07	1.299E-06	1.125E-05	1.336E-04	1.586E-03	1.470E-02
Pb-210	U-234	1.000E+00	2.588E-11	2.574E-10	2.157E-09	4.295E-08	8.538E-07	2.177E-05	3.331E-04	3.568E-03
Pb-210	U-238	9.999E-01	1.664E-17	3.429E-16	6.048E-15	3.409E-13	1.961E-11	1.742E-09	8.626E-08	3.213E-06
Pb-210	ΣDOSE(j)		2.588E-11	2.574E-10	2.157E-09	4.296E-08	8.538E-07	2.177E-05	3.332E-04	3.571E-03
U-238	U-238	5.400E-05	2.924E-06	2.932E-06	2.948E-06	3.003E-06	3.160E-06	3.692E-06	4.664E-06	3.696E-06
U-238	U-238	9.999E-01	6.009E-02	6.027E-02	6.064E-02	6.192E-02	6.563E-02	7.950E-02	1.250E-01	9.908E-02
U-238	ΣDOSE(j)		6.009E-02	6.028E-02	6.064E-02	6.192E-02	6.563E-02	7.951E-02	1.250E-01	9.909E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Root CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.38 seconds

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Summary : Hematite - Root Ra-226+C CSM

June 21, 2011

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Ra-226+C CSM

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	153375.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.683E+00	7.694E+00	7.712E+00	7.771E+00	7.944E+00	8.605E+00	1.075E+01	7.888E+00
M(t):	3.073E-01	3.078E-01	3.085E-01	3.108E-01	3.178E-01	3.442E-01	4.301E-01	3.155E-01

Maximum TDOSE(t): 1.099E+01 mrem/yr at t = 250.0 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.500E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.118E-07	0.0000	9.192E-08	0.0000	0.000E+00	0.0000	7.757E-04	0.0001	7.552E-05	0.0000	9.907E-05	0.0000	4.140E-05	0.0000
Ra-226	2.477E+00	0.2253	2.832E-04	0.0000	0.000E+00	0.0000	7.598E+00	0.6911	2.748E-01	0.0250	5.320E-01	0.0484	1.101E-01	0.0100
Total	2.477E+00	0.2253	2.833E-04	0.0000	0.000E+00	0.0000	7.599E+00	0.6912	2.749E-01	0.0250	5.321E-01	0.0484	1.101E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.500E+02 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.924E-04	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.099E+01	0.9999
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.099E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.808E-05	0.0000	4.493E-07	0.0000	0.000E+00	0.0000	1.589E+00	0.2068	1.521E-02	0.0020	1.547E-02	0.0020	2.023E-04	0.0000
Ra-226	3.574E-01	0.0465	1.793E-07	0.0000	0.000E+00	0.0000	5.469E+00	0.7118	6.530E-02	0.0085	1.724E-01	0.0224	4.172E-05	0.0000
Total	3.574E-01	0.0465	6.286E-07	0.0000	0.000E+00	0.0000	7.057E+00	0.9185	8.050E-02	0.0105	1.878E-01	0.0244	2.441E-04	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.620E+00	0.2108
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.064E+00	0.7892
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.683E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.758E-05	0.0000	1.311E-06	0.0000	0.000E+00	0.0000	1.541E+00	0.2003	1.540E-02	0.0020	1.588E-02	0.0021	5.904E-04	0.0001
Ra-226	3.600E-01	0.0468	5.744E-07	0.0000	0.000E+00	0.0000	5.522E+00	0.7176	6.610E-02	0.0086	1.736E-01	0.0226	1.416E-04	0.0000
Total	3.600E-01	0.0468	1.885E-06	0.0000	0.000E+00	0.0000	7.063E+00	0.9179	8.150E-02	0.0106	1.895E-01	0.0246	7.321E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.573E+00	0.2044
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.122E+00	0.7956
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.694E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.661E-05	0.0000	2.876E-06	0.0000	0.000E+00	0.0000	1.450E+00	0.1880	1.571E-02	0.0020	1.658E-02	0.0022	1.295E-03	0.0002
Ra-226	3.654E-01	0.0474	1.521E-06	0.0000	0.000E+00	0.0000	5.619E+00	0.7286	6.753E-02	0.0088	1.760E-01	0.0228	4.119E-04	0.0001
Total	3.654E-01	0.0474	4.397E-06	0.0000	0.000E+00	0.0000	7.069E+00	0.9166	8.323E-02	0.0108	1.925E-01	0.0250	1.707E-03	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.484E+00	0.1924
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.228E+00	0.8076
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.712E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.347E-05	0.0000	6.938E-06	0.0000	0.000E+00	0.0000	1.172E+00	0.1508	1.612E-02	0.0021	1.801E-02	0.0023	3.125E-03	0.0004
Ra-226	3.847E-01	0.0495	6.228E-06	0.0000	0.000E+00	0.0000	5.917E+00	0.7614	7.317E-02	0.0094	1.853E-01	0.0238	1.989E-03	0.0003
Total	3.847E-01	0.0495	1.317E-05	0.0000	0.000E+00	0.0000	7.089E+00	0.9122	8.929E-02	0.0115	2.033E-01	0.0262	5.114E-03	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.209E+00	0.1556
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.562E+00	0.8444
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.771E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.640E-05	0.0000	1.079E-05	0.0000	0.000E+00	0.0000	6.374E-01	0.0802	1.398E-02	0.0018	1.680E-02	0.0021	4.861E-03	0.0006
Ra-226	4.458E-01	0.0561	2.720E-05	0.0000	0.000E+00	0.0000	6.506E+00	0.8190	9.243E-02	0.0116	2.168E-01	0.0273	9.901E-03	0.0012
Total	4.458E-01	0.0561	3.800E-05	0.0000	0.000E+00	0.0000	7.143E+00	0.8992	1.064E-01	0.0134	2.336E-01	0.0294	1.476E-02	0.0019

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.731E-01	0.0847
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.271E+00	0.9153
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.699E-06	0.0000	3.996E-06	0.0000	0.000E+00	0.0000	7.552E-02	0.0088	3.673E-03	0.0004	4.702E-03	0.0005	1.800E-03	0.0002
Ra-226	7.489E-01	0.0870	1.177E-04	0.0000	0.000E+00	0.0000	7.234E+00	0.8406	1.603E-01	0.0186	3.309E-01	0.0385	4.549E-02	0.0053
Total	7.489E-01	0.0870	1.217E-04	0.0000	0.000E+00	0.0000	7.309E+00	0.8494	1.640E-01	0.0191	3.356E-01	0.0390	4.729E-02	0.0055

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.570E-02	0.0100
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.520E+00	0.9900
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.605E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.282E-07	0.0000	1.926E-08	0.0000	0.000E+00	0.0000	1.625E-04	0.0000	1.582E-05	0.0000	2.076E-05	0.0000	8.674E-06	0.0000
Ra-226	2.423E+00	0.2253	2.771E-04	0.0000	0.000E+00	0.0000	7.432E+00	0.6912	2.689E-01	0.0250	5.204E-01	0.0484	1.077E-01	0.0100
Total	2.423E+00	0.2253	2.771E-04	0.0000	0.000E+00	0.0000	7.432E+00	0.6912	2.689E-01	0.0250	5.204E-01	0.0484	1.077E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.079E-04	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.075E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.075E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.106E-17	0.0000	6.168E-18	0.0000	0.000E+00	0.0000	5.203E-14	0.0000	5.067E-15	0.0000	6.647E-15	0.0000	2.778E-15	0.0000
Ra-226	1.778E+00	0.2254	2.034E-04	0.0000	0.000E+00	0.0000	5.452E+00	0.6911	1.973E-01	0.0250	3.818E-01	0.0484	7.905E-02	0.0100
Total	1.778E+00	0.2254	2.034E-04	0.0000	0.000E+00	0.0000	5.452E+00	0.6911	1.973E-01	0.0250	3.818E-01	0.0484	7.905E-02	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.657E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.888E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.888E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.620E+00	1.573E+00	1.484E+00	1.209E+00	6.731E-01	8.570E-02	2.079E-04	6.657E-14
Ra-226+D	Ra-226+D	1.000E+00	6.010E+00	6.015E+00	6.026E+00	6.065E+00	6.181E+00	6.664E+00	8.531E+00	6.259E+00
Ra-226+D	Pb-210+D	1.000E+00	5.406E-02	1.064E-01	2.018E-01	4.973E-01	1.090E+00	1.856E+00	2.222E+00	1.630E+00
Ra-226+D	ΣDSR(j)		6.064E+00	6.122E+00	6.228E+00	6.562E+00	7.271E+00	8.520E+00	1.075E+01	7.888E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.544E+01	1.589E+01	1.685E+01	2.068E+01	3.714E+01	2.917E+02	1.202E+05	*7.634E+13	
Ra-226	4.123E+00	4.084E+00	4.014E+00	3.810E+00	3.438E+00	2.934E+00	2.325E+00	3.169E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 250.0 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.620E+00	1.544E+01	9.924E-04	2.519E+04
Ra-226	1.000E+00	250.0 ± 0.5	1.099E+01	2.274E+00	1.099E+01	2.274E+00

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.620E+00	1.573E+00	1.484E+00	1.209E+00	6.731E-01	8.570E-02	2.079E-04	6.657E-14
Pb-210	Ra-226	1.000E+00	5.406E-02	1.064E-01	2.018E-01	4.973E-01	1.090E+00	1.856E+00	2.222E+00	1.630E+00
Pb-210	ΣDOSE(j)		1.674E+00	1.679E+00	1.685E+00	1.706E+00	1.763E+00	1.941E+00	2.222E+00	1.630E+00
Ra-226	Ra-226	1.000E+00	6.010E+00	6.015E+00	6.026E+00	6.065E+00	6.181E+00	6.664E+00	8.531E+00	6.259E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.75 seconds

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Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Summary : Hematite - Root Th-232+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Root Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Summary : Hematite - Root Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Root Th-232+C CSM

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Th-232+C CSM

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	153375.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.967E+00	6.978E+00	6.999E+00	7.074E+00	7.297E+00	8.219E+00	1.194E+01	1.193E+01
M(t):	2.787E-01	2.791E-01	2.800E-01	2.830E-01	2.919E-01	3.288E-01	4.778E-01	4.773E-01

Maximum TDOSE(t): 1.195E+01 mrem/yr at t = 250.3 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.503E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.869E-13	0.0000	3.802E-16	0.0000	0.000E+00	0.0000	5.315E-13	0.0000	9.607E-15	0.0000	2.766E-14	0.0000	2.772E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.000E+00	0.3348	1.967E-02	0.0016	0.000E+00	0.0000	7.346E+00	0.6150	1.354E-01	0.0113	3.736E-01	0.0313	7.068E-02	0.0059
Total	4.000E+00	0.3348	1.967E-02	0.0016	0.000E+00	0.0000	7.346E+00	0.6150	1.354E-01	0.0113	3.736E-01	0.0313	7.068E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.503E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.588E-13	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.231E-01	0.0320	1.473E-06	0.0000	0.000E+00	0.0000	5.614E+00	0.8058	6.625E-02	0.0095	1.761E-01	0.0253	4.244E-05	0.0000
Th-228	3.520E-01	0.0505	5.384E-06	0.0000	0.000E+00	0.0000	3.734E-02	0.0054	4.666E-05	0.0000	6.420E-06	0.0000	1.810E-05	0.0000
Th-232	1.246E-02	0.0018	3.251E-05	0.0000	0.000E+00	0.0000	4.743E-01	0.0681	2.913E-03	0.0004	8.319E-03	0.0012	8.088E-05	0.0000
Total	5.876E-01	0.0843	3.936E-05	0.0000	0.000E+00	0.0000	6.125E+00	0.8792	6.921E-02	0.0099	1.845E-01	0.0265	1.414E-04	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.079E+00	0.8726
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.894E-01	0.0559
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.981E-01	0.0715
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.967E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.005E-01	0.0431	8.151E-06	0.0000	0.000E+00	0.0000	4.994E+00	0.7156	5.900E-02	0.0085	1.568E-01	0.0225	1.284E-04	0.0000
Th-228	2.467E-01	0.0353	1.172E-05	0.0000	0.000E+00	0.0000	2.601E-02	0.0037	3.794E-05	0.0000	5.442E-06	0.0000	3.941E-05	0.0000
Th-232	4.471E-02	0.0064	9.821E-05	0.0000	0.000E+00	0.0000	1.112E+00	0.1593	1.039E-02	0.0015	2.822E-02	0.0040	2.564E-04	0.0000
Total	5.918E-01	0.0848	1.181E-04	0.0000	0.000E+00	0.0000	6.131E+00	0.8787	6.942E-02	0.0099	1.850E-01	0.0265	4.242E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.510E+00	0.7896
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.728E-01	0.0391
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.196E+00	0.1713
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.978E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.525E-01	0.0504	2.724E-05	0.0000	0.000E+00	0.0000	3.942E+00	0.5632	4.668E-02	0.0067	1.242E-01	0.0177	2.776E-04	0.0000
Th-228	1.211E-01	0.0173	1.341E-05	0.0000	0.000E+00	0.0000	1.262E-02	0.0018	2.370E-05	0.0000	3.580E-06	0.0000	4.507E-05	0.0000
Th-232	1.267E-01	0.0181	2.349E-04	0.0000	0.000E+00	0.0000	2.187E+00	0.3124	2.325E-02	0.0033	6.233E-02	0.0089	6.672E-04	0.0001
Total	6.004E-01	0.0858	2.755E-04	0.0000	0.000E+00	0.0000	6.141E+00	0.8774	6.995E-02	0.0100	1.865E-01	0.0266	9.899E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.465E+00	0.6380
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.338E-01	0.0191
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.400E+00	0.3429
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.999E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.262E-01	0.0320	5.639E-05	0.0000	0.000E+00	0.0000	1.711E+00	0.2419	2.056E-02	0.0029	5.490E-02	0.0078	4.299E-04	0.0001
Th-228	1.005E-02	0.0014	3.203E-06	0.0000	0.000E+00	0.0000	1.005E-03	0.0001	3.351E-06	0.0000	5.448E-07	0.0000	1.077E-05	0.0000
Th-232	3.950E-01	0.0558	7.670E-04	0.0001	0.000E+00	0.0000	4.463E+00	0.6309	5.125E-02	0.0072	1.369E-01	0.0194	2.529E-03	0.0004
Total	6.313E-01	0.0892	8.266E-04	0.0001	0.000E+00	0.0000	6.175E+00	0.8730	7.181E-02	0.0102	1.918E-01	0.0271	2.970E-03	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.013E+00	0.2846
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.107E-02	0.0016
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.049E+00	0.7138
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.074E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.492E-02	0.0034	1.594E-05	0.0000	0.000E+00	0.0000	1.561E-01	0.0214	1.967E-03	0.0003	5.308E-03	0.0007	1.163E-04	0.0000
Th-228	8.186E-06	0.0000	6.644E-09	0.0000	0.000E+00	0.0000	7.276E-07	0.0000	5.392E-09	0.0000	9.206E-10	0.0000	2.233E-08	0.0000
Th-232	7.040E-01	0.0965	2.385E-03	0.0003	0.000E+00	0.0000	6.117E+00	0.8383	7.515E-02	0.0103	2.017E-01	0.0276	8.509E-03	0.0012
Total	7.290E-01	0.0999	2.401E-03	0.0003	0.000E+00	0.0000	6.273E+00	0.8597	7.712E-02	0.0106	2.070E-01	0.0284	8.626E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.884E-01	0.0258
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.949E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.109E+00	0.9742
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.297E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.883E-06	0.0000	1.137E-08	0.0000	0.000E+00	0.0000	3.560E-05	0.0000	5.177E-07	0.0000	1.438E-06	0.0000	8.291E-08	0.0000
Th-228	1.269E-16	0.0000	2.118E-19	0.0000	0.000E+00	0.0000	7.419E-18	0.0000	1.538E-19	0.0000	2.691E-20	0.0000	7.119E-19	0.0000
Th-232	1.212E+00	0.1475	7.911E-03	0.0010	0.000E+00	0.0000	6.615E+00	0.8048	9.570E-02	0.0116	2.601E-01	0.0316	2.842E-02	0.0035
Total	1.212E+00	0.1475	7.911E-03	0.0010	0.000E+00	0.0000	6.615E+00	0.8048	9.570E-02	0.0116	2.601E-01	0.0316	2.842E-02	0.0035

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.654E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.355E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.219E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.219E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.724E-16	0.0000	9.557E-19	0.0000	0.000E+00	0.0000	1.336E-15	0.0000	2.414E-17	0.0000	6.951E-17	0.0000	6.967E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.999E+00	0.3348	1.967E-02	0.0016	0.000E+00	0.0000	7.346E+00	0.6150	1.354E-01	0.0113	3.736E-01	0.0313	7.068E-02	0.0059
Total	3.999E+00	0.3348	1.967E-02	0.0016	0.000E+00	0.0000	7.346E+00	0.6150	1.354E-01	0.0113	3.736E-01	0.0313	7.068E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.410E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.194E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.194E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.996E+00	0.3349	1.966E-02	0.0016	0.000E+00	0.0000	7.337E+00	0.6149	1.353E-01	0.0113	3.732E-01	0.0313	7.062E-02	0.0059
Total	3.996E+00	0.3349	1.966E-02	0.0016	0.000E+00	0.0000	7.337E+00	0.6149	1.353E-01	0.0113	3.732E-01	0.0313	7.062E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.193E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.193E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	5.973E+00	5.301E+00	4.175E+00	1.810E+00	1.661E-01	3.910E-05	1.682E-15	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.059E-01	2.091E-01	2.908E-01	2.037E-01	2.229E-02	7.439E-06	7.274E-16	0.000E+00
Ra-228+D	ΣDSR(j)		6.079E+00	5.510E+00	4.465E+00	2.013E+00	1.884E-01	4.654E-05	2.410E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.894E-01	2.728E-01	1.338E-01	1.107E-02	8.949E-06	1.355E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.506E-01	1.510E-01	1.517E-01	1.544E-01	1.619E-01	1.883E-01	2.448E-01	2.446E-01
Th-232	Ra-228+D	1.000E+00	3.424E-01	1.020E+00	2.160E+00	4.576E+00	6.368E+00	7.110E+00	9.061E+00	9.051E+00
Th-232	Th-228+D	1.000E+00	5.124E-03	2.489E-02	8.810E-02	3.193E-01	5.788E-01	9.206E-01	2.639E+00	2.637E+00
Th-232	ΣDSR(j)		4.981E-01	1.196E+00	2.400E+00	5.049E+00	7.109E+00	8.219E+00	1.194E+01	1.193E+01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	4.112E+00	4.537E+00	5.599E+00	1.242E+01	1.327E+02	5.372E+05	*2.726E+14	*2.726E+14	
Th-228	6.420E+01	9.165E+01	1.868E+02	2.259E+03	2.794E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	5.019E+01	2.091E+01	1.042E+01	4.951E+00	3.517E+00	3.042E+00	2.093E+00	2.095E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 250.3 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	6.079E+00	4.112E+00	9.588E-13	2.607E+13
Th-228	1.000E+00	0.000E+00	3.894E-01	6.420E+01	0.000E+00	*8.195E+14
Th-232	1.000E+00	250.3 ± 0.5	1.195E+01	2.093E+00	1.195E+01	2.093E+00

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	5.973E+00	5.301E+00	4.175E+00	1.810E+00	1.661E-01	3.910E-05	1.682E-15	0.000E+00
Ra-228	Th-232	1.000E+00	3.424E-01	1.020E+00	2.160E+00	4.576E+00	6.368E+00	7.110E+00	9.061E+00	9.051E+00
Ra-228	ΣDOSE(j)		6.316E+00	6.320E+00	6.335E+00	6.385E+00	6.534E+00	7.111E+00	9.061E+00	9.051E+00
Th-228	Ra-228	1.000E+00	1.059E-01	2.091E-01	2.908E-01	2.037E-01	2.229E-02	7.439E-06	7.274E-16	0.000E+00
Th-228	Th-228	1.000E+00	3.894E-01	2.728E-01	1.338E-01	1.107E-02	8.949E-06	1.355E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	5.124E-03	2.489E-02	8.810E-02	3.193E-01	5.788E-01	9.206E-01	2.639E+00	2.637E+00
Th-228	ΣDOSE(j)		5.005E-01	5.067E-01	5.127E-01	5.341E-01	6.011E-01	9.206E-01	2.639E+00	2.637E+00
Th-232	Th-232	1.000E+00	1.506E-01	1.510E-01	1.517E-01	1.544E-01	1.619E-01	1.883E-01	2.448E-01	2.446E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.75 seconds

Summary : Hematite - Deep CSM

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Deep CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep CSM

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	153375.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE (t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.821E-12	3.855E-12	3.923E-12	4.175E-12	5.004E-12	9.738E-12	7.401E-11	6.007E+01
M(t):	1.528E-13	1.542E-13	1.569E-13	1.670E-13	2.002E-13	3.895E-13	2.960E-12	2.403E+00

Maximum TDOSE(t): 8.436E+01 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

Summary : Hematite - Deep CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.054E-03	0.0000	8.554E-04	0.0000	0.000E+00	0.0000	9.505E-05	0.0000	1.409E-05	0.0000	1.184E-06	0.0000	3.020E-03	0.0000
Np-237	5.738E+01	0.6801	2.390E+01	0.2833	0.000E+00	0.0000	2.656E+00	0.0315	3.938E-01	0.0047	3.308E-02	0.0004	8.436E+01	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.783E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.290E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.441E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.912E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.472E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.104E-10	0.0000
Total	5.738E+01	0.6801	2.390E+01	0.2833	0.000E+00	0.0000	2.656E+00	0.0315	3.938E-01	0.0047	3.309E-02	0.0004	8.436E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.959E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.441E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.221E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.262E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.482E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	8.161E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.098E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.796E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.821E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.959E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.221E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.482E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.161E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.098E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.796E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.821E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.199E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.468E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.334E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.217E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.514E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.749E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.129E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.830E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.855E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.468E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.334E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.749E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.830E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.855E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.858E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.524E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.565E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.802E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.579E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	3.082E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.234E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.898E-12	0.9935	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.923E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.858E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.565E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.802E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.082E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.898E-12	0.9935
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.923E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.241E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.728E-14	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	9.423E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.225E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.832E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.902E-15	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.050E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.145E-12	0.9927	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.175E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.241E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.728E-14	0.0065
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.423E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.225E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-15	0.0007
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.145E-12	0.9927
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.175E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.328E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.411E-14	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.238E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.720E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.799E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.835E-14	0.0057	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.279E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.941E-12	0.9874	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.004E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.328E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.411E-14	0.0068
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.238E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.720E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.835E-14	0.0057
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.279E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E-12	0.9874
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.004E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.332E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.483E-14	0.0077	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.220E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.428E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.234E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.151E-13	0.0529	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.743E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	9.139E-12	0.9385	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.738E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.483E-14	0.0077
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.428E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-27	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-13	0.0529
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.139E-12	0.9385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.738E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.045E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.113E-13	0.0096	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	4.957E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.822E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.550E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.006E-11	0.2711	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.263E-13	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.301E-11	0.7163	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.401E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.045E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.113E-13	0.0096
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.822E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.550E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.006E-11	0.2711
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.263E-13	0.0031
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.301E-11	0.7163
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.401E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.795E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.538E-05	0.0000	7.908E-09	0.0000	8.311E-10	0.0000	0.000E+00	0.0000
Np-237	1.715E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.977E-04	0.0000	6.706E-06	0.0000	2.067E-07	0.0000	0.000E+00	0.0000
Pu-239	6.963E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.041E-05	0.0000	5.919E-08	0.0000	1.799E-09	0.0000	0.000E+00	0.0000
Pu-240	8.430E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.518E-05	0.0000	5.479E-08	0.0000	1.673E-09	0.0000	0.000E+00	0.0000
Tc-99	2.369E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-04	0.0000	1.916E-07	0.0000	5.939E-06	0.0000	0.000E+00	0.0000
U-234	3.849E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-05	0.0000	2.092E-07	0.0000	3.376E-07	0.0000	0.000E+00	0.0000
U-235	8.427E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.049E-05	0.0000	1.698E-07	0.0000	2.421E-07	0.0000	0.000E+00	0.0000
U-238	2.512E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-05	0.0000	1.686E-07	0.0000	2.388E-07	0.0000	0.000E+00	0.0000
Total	6.617E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.275E-03	0.0000	7.567E-06	0.0000	6.968E-06	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.689E-03	0.0001	2.370E-03	0.0000	0.000E+00	0.0000	2.633E-04	0.0000	3.905E-05	0.0000	3.288E-06	0.0000	8.379E-03	0.0001
Np-237	4.084E+01	0.6798	1.701E+01	0.2832	0.000E+00	0.0000	1.890E+00	0.0315	2.804E-01	0.0047	2.368E-02	0.0004	6.004E+01	0.9995
Pu-239	7.852E-12	0.0000	8.654E-13	0.0000	0.000E+00	0.0000	3.588E-13	0.0000	6.515E-14	0.0000	2.684E-13	0.0000	7.047E-05	0.0000
Pu-240	2.373E-10	0.0000	2.613E-11	0.0000	0.000E+00	0.0000	1.085E-11	0.0000	1.970E-12	0.0000	8.117E-12	0.0000	6.523E-05	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.363E-04	0.0000
U-234	6.707E-03	0.0001	7.433E-04	0.0000	0.000E+00	0.0000	3.076E-04	0.0000	5.766E-05	0.0000	2.305E-04	0.0000	8.066E-03	0.0001
U-235	6.354E-03	0.0001	7.043E-04	0.0000	0.000E+00	0.0000	2.914E-04	0.0000	5.463E-05	0.0000	2.184E-04	0.0000	7.684E-03	0.0001
U-238	6.405E-03	0.0001	7.099E-04	0.0000	0.000E+00	0.0000	2.937E-04	0.0000	5.507E-05	0.0000	2.201E-04	0.0000	7.700E-03	0.0001
Total	4.086E+01	0.6802	1.701E+01	0.2832	0.000E+00	0.0000	1.891E+00	0.0315	2.806E-01	0.0047	2.436E-02	0.0004	6.007E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	1.521E-05
Am-241	Np-237+D	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	8.364E-03
Am-241	U-233	1.000E+00	3.714E-32	2.629E-31	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	4.269E-07
Am-241	Th-229+D	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	2.923E-10
Am-241	ΣDSR (j)		3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.328E-19	2.332E-18	6.045E-17	8.379E-03
Np-237+D	Np-237+D	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	6.003E+01
Np-237+D	U-233	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	5.935E-03
Np-237+D	Th-229+D	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	5.858E-06
Np-237+D	ΣDSR (j)		2.441E-14	2.468E-14	2.524E-14	2.728E-14	3.411E-14	7.483E-14	7.113E-13	6.004E+01
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.047E-05
Pu-239	U-235+D	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	2.700E-11
Pu-239	Pa-231	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-11
Pu-239	Ac-227+D	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.708E-12
Pu-239	ΣDSR (j)		8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.220E-19	4.957E-18	7.047E-05
Pu-240	Pu-240	4.950E-08	5.508E-37	5.631E-37	5.884E-37	6.863E-37	1.065E-36	4.962E-36	4.027E-34	3.229E-12
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.523E-05
Pu-240	U-236	1.000E+00	7.656E-35	2.338E-34	5.672E-34	1.955E-33	8.448E-33	1.118E-31	1.778E-29	7.957E-10
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	1.401E-44	1.359E-43	1.738E-42	8.172E-41	4.825E-38	3.603E-17
Pu-240	Ra-228+D	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.438E-15
Pu-240	Th-228+D	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	1.010E-16
Pu-240	ΣDSR (j)		1.262E-28	3.217E-27	6.802E-26	3.225E-24	8.720E-23	2.428E-21	8.822E-20	6.523E-05
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.363E-04
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	8.062E-03
U-234	Th-230	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.898E-08
U-234	Ra-226+D	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.258E-06
U-234	Pb-210+D	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	9.058E-07
U-234	ΣDSR (j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	8.066E-03
U-235+D	U-235+D	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	7.638E-03
U-235+D	Pa-231	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	4.013E-05
U-235+D	Ac-227+D	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.496E-06
U-235+D	ΣDSR (j)		1.098E-16	1.129E-16	1.234E-16	2.050E-16	8.279E-16	8.743E-15	2.263E-13	7.684E-03
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.934E-07
U-238+D	U-238+D	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	7.676E-03
U-238+D	U-234	9.999E-01	4.607E-32	1.406E-31	3.408E-31	1.171E-30	5.009E-30	6.405E-29	9.222E-27	2.290E-05
U-238+D	Th-230	9.999E-01	2.932E-36	2.086E-35	1.143E-34	1.166E-33	1.430E-32	5.771E-31	2.198E-28	1.221E-10
U-238+D	Ra-226+D	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	3.047E-09
U-238+D	Pb-210+D	9.999E-01	4.347E-33	1.347E-31	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	2.013E-09
U-238+D	ΣDSR (j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	7.699E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Deep CSM

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	2.984E+03
Np-237	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	4.164E-01
Pu-239	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	3.547E+05
Pu-240	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	3.832E+05
Tc-99	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	1.058E+05
U-234	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	3.099E+03
U-235	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	3.254E+03
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	3.247E+03

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	1.000E+03	8.379E-03	2.984E+03	3.020E-03	8.279E+03
Np-237	1.000E+00	595 ± 1	8.436E+01	2.964E-01	8.436E+01	2.964E-01
Pu-239	1.000E+00	1.000E+03	7.047E-05	3.547E+05	2.783E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	6.523E-05	3.832E+05	2.290E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	2.363E-04	1.058E+05	4.441E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	8.066E-03	3.099E+03	6.912E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	7.684E-03	3.254E+03	8.472E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	7.700E-03	3.247E+03	7.104E-10	*3.361E+05

*At specific activity limit

Summary : Hematite - Deep CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.521E-05
Np-237	Am-241	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	8.364E-03
Np-237	Np-237	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	6.003E+01
Np-237	ΣDOSE (j)		2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.408E-14	7.423E-14	6.867E-13	6.004E+01
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	4.269E-07
U-233	Np-237	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	5.935E-03
U-233	ΣDOSE (j)		3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.139E-23	2.665E-22	1.192E-20	5.936E-03
Th-229	Am-241	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	2.923E-10
Th-229	Np-237	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	5.858E-06
Th-229	ΣDOSE (j)		9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	5.858E-06
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.047E-05
U-235	Pu-239	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	2.700E-11
U-235	U-235	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	7.638E-03
U-235	ΣDOSE (j)		1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	7.638E-03
Pa-231	Pu-239	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-11
Pa-231	U-235	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	4.013E-05
Pa-231	ΣDOSE (j)		8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	4.013E-05
Ac-227	Pu-239	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.708E-12
Ac-227	U-235	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.496E-06
Ac-227	ΣDOSE (j)		2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.496E-06
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.229E-12
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.523E-05
Pu-240	ΣDOSE (j)		1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.523E-05
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-29	7.957E-10
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.603E-17
Ra-228	Pu-240	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.438E-15
Th-228	Pu-240	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	1.010E-16
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.363E-04
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	8.062E-03
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	1.171E-30	5.009E-30	6.405E-29	9.222E-27	2.290E-05
U-234	ΣDOSE (j)		3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.793E-26	2.248E-25	1.083E-23	8.085E-03
Th-230	U-234	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.898E-08
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-28	1.221E-10
Th-230	ΣDOSE (j)		3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.239E-25	8.911E-08

Summary : Hematite - Deep CSM

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.258E-06
Ra-226	U-238	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	3.047E-09
Ra-226	ΣDOSE(j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.007E-11	3.261E-06
Pb-210	U-234	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	9.058E-07
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	2.013E-09
Pb-210	ΣDOSE(j)		7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.052E-20	3.128E-18	9.078E-07
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.934E-07
U-238	U-238	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	7.676E-03
U-238	ΣDOSE(j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	7.677E-03

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Deep CSM

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.40 seconds

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Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Appendix N

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 153375.00 square meters	Pb-210 1.000E+00
Thickness: 5.20 meters	Ra-226 1.000E+00
Cover Depth: 1.50 meters	

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.789E-03
M(t):	5.012E-10	5.049E-10	5.121E-10	5.385E-10	6.215E-10	1.027E-09	4.307E-09	7.156E-05

Maximum TDOSE(t): 1.789E-03 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.494E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.494E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.462E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000

*Sum of all water independent and dependent pathways.

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.399E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.399E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.199E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.725E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.725E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.657E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.657E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.042E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.573E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E-17	0.0000	1.216E-19	0.0000	1.400E-19	0.0000	0.000E+00	0.0000
Ra-226	1.629E-05	0.0091	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.9622	1.402E-05	0.0078	3.728E-05	0.0208	0.000E+00	0.0000
Total	1.629E-05	0.0091	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.9622	1.402E-05	0.0078	3.728E-05	0.0208	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.837E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.789E-03	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.789E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.837E-17
Ra-226+D	Ra-226+D	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.379E-03
Ra-226+D	Pb-210+D	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.105E-04
Ra-226+D	ΣDSR(j)		1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.789E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	1.995E+09	1.981E+09	1.953E+09	1.857E+09	1.609E+09	9.740E+08	2.322E+08	1.397E+04	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.494E-15	*7.634E+13	1.837E-17	*7.634E+13
Ra-226	1.000E+00	1.000E+03	1.789E-03	1.397E+04	1.789E-03	1.397E+04

*At specific activity limit

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.837E-17
Pb-210	Ra-226	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.105E-04
Pb-210	ΣDOSE(j)		1.517E-15	1.531E-15	1.559E-15	1.661E-15	1.985E-15	3.665E-15	2.091E-14	4.105E-04
Ra-226	Ra-226	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.379E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.56 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Deep Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Deep Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Th-232+C CSM

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Appendix N

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g	
Area: 153375.00 square meters	Ra-228	1.000E+00
Thickness: 5.20 meters	Th-228	1.000E+00
Cover Depth: 1.50 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.198E-07	2.212E-07	2.241E-07	2.343E-07	2.663E-07	4.168E-07	1.500E-06	2.512E-03
M(t):	8.792E-09	8.849E-09	8.963E-09	9.373E-09	1.065E-08	1.667E-08	6.001E-08	1.005E-04

Maximum TDOSE(t): 2.512E-03 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.482E-08	0.1584	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.835E-07	0.8349	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.475E-09	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.198E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.482E-08	0.1584
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.835E-07	0.8349
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.475E-09	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.198E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.375E-08	0.3786	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.286E-07	0.5811	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.907E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.212E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.375E-08	0.3786
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.286E-07	0.5811
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.907E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.212E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.254E-07	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.309E-08	0.2816	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.553E-08	0.1586	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.241E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E-07	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.309E-08	0.2816
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.553E-08	0.1586
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.241E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.111E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.223E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.380E-07	0.5889	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.343E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.111E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.223E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-07	0.5889
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.343E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.008E-08	0.0379	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.230E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.562E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.663E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.008E-08	0.0379
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.230E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.562E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.663E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.416E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.396E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.416E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.396E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.154E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.154E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.351E-04	0.0538	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.9163	1.860E-05	0.0074	5.655E-05	0.0225	0.000E+00	0.0000
Total	1.351E-04	0.0538	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.9163	1.860E-05	0.0074	5.655E-05	0.0225	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.512E-03	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.512E-03	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Ra-228+D	ΣDSR(j)		3.482E-08	8.375E-08	1.254E-07	9.111E-08	1.008E-08	3.416E-12	4.154E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.653E-05
Th-232	Ra-228+D	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.294E-03
Th-232	Th-228+D	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.619E-04
Th-232	ΣDSR(j)		1.475E-09	8.907E-09	3.553E-08	1.380E-07	2.562E-07	4.168E-07	1.500E-06	2.512E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	7.180E+08	2.985E+08	1.993E+08	2.744E+08	2.480E+09	7.319E+12	*2.726E+14	*2.726E+14	
Th-228	1.362E+08	1.945E+08	3.963E+08	4.787E+09	5.910E+12	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	9.951E+03

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.213 ± 0.008	1.301E-07	1.921E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	1.835E-07	1.362E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	2.512E-03	9.951E+03	2.512E-03	9.951E+03

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228	Th-232	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.294E-03
Ra-228	ΣDOSE(j)		1.002E-09	1.011E-09	1.028E-09	1.090E-09	1.290E-09	2.326E-09	1.252E-08	2.294E-03
Th-228	Ra-228	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Th-228	Th-228	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.619E-04
Th-228	ΣDOSE(j)		2.188E-07	2.202E-07	2.230E-07	2.332E-07	2.650E-07	4.145E-07	1.488E-06	1.619E-04
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.653E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.45 seconds

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Summary : Hematite - Uniform CSM

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Attachment 4 to HEM-11-91

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Uniform CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Uniform CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Uniform CSM

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	153375.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	8.836E+00	8.831E+00	8.822E+00	8.788E+00	8.694E+00	8.376E+00	7.556E+00	6.862E+01
M(t):	3.534E-01	3.533E-01	3.529E-01	3.515E-01	3.478E-01	3.351E-01	3.023E-01	2.745E+00

Maximum TDOSE(t): 9.188E+01 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.258E-03	0.0000	1.688E-03	0.0000	0.000E+00	0.0000	9.363E-02	0.0010	2.120E-03	0.0000	2.999E-04	0.0000	1.987E-02	0.0002
Np-237	1.855E-01	0.0020	3.622E-03	0.0000	0.000E+00	0.0000	4.005E+00	0.0436	1.351E-01	0.0015	4.462E-03	0.0000	4.276E-02	0.0005
Pu-239	7.200E-05	0.0000	4.136E-03	0.0000	0.000E+00	0.0000	2.295E-01	0.0025	1.036E-02	0.0001	3.654E-04	0.0000	4.900E-02	0.0005
Pu-240	3.437E-05	0.0000	3.950E-03	0.0000	0.000E+00	0.0000	2.192E-01	0.0024	9.899E-03	0.0001	3.493E-04	0.0000	4.679E-02	0.0005
Tc-99	2.863E-05	0.0000	7.486E-08	0.0000	0.000E+00	0.0000	8.190E-01	0.0089	9.549E-04	0.0000	2.597E-02	0.0003	1.886E-05	0.0000
U-234	1.829E-03	0.0000	1.269E-03	0.0000	0.000E+00	0.0000	7.217E-02	0.0008	1.153E-02	0.0001	1.870E-02	0.0002	3.965E-03	0.0000
U-235	1.882E-01	0.0020	2.095E-03	0.0000	0.000E+00	0.0000	1.610E-01	0.0018	1.086E-02	0.0001	1.748E-02	0.0002	7.927E-03	0.0001
U-238	3.620E-02	0.0004	1.124E-03	0.0000	0.000E+00	0.0000	6.365E-02	0.0007	1.081E-02	0.0001	1.748E-02	0.0002	3.672E-03	0.0000
Total	4.161E-01	0.0045	1.788E-02	0.0002	0.000E+00	0.0000	5.663E+00	0.0616	1.916E-01	0.0021	8.510E-02	0.0009	1.740E-01	0.0019

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.056E-03	0.0000	8.563E-04	0.0000	0.000E+00	0.0000	9.515E-05	0.0000	1.410E-05	0.0000	1.184E-06	0.0000	1.249E-01	0.0014
Np-237	5.804E+01	0.6316	2.418E+01	0.2631	0.000E+00	0.0000	2.686E+00	0.0292	3.984E-01	0.0043	3.343E-02	0.0004	8.971E+01	0.9763
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.935E-01	0.0032
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.803E-01	0.0031
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.460E-01	0.0092
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.095E-01	0.0012
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.876E-01	0.0042
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.329E-01	0.0014
Total	5.804E+01	0.6317	2.418E+01	0.2631	0.000E+00	0.0000	2.686E+00	0.0292	3.984E-01	0.0043	3.343E-02	0.0004	9.188E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.100E-02	0.0012	4.387E-03	0.0005	0.000E+00	0.0000	2.419E-01	0.0274	5.461E-03	0.0006	7.780E-04	0.0001	5.163E-02	0.0058
Np-237	2.735E-01	0.0310	5.338E-03	0.0006	0.000E+00	0.0000	5.908E+00	0.6686	1.992E-01	0.0225	6.521E-03	0.0007	6.306E-02	0.0071
Pu-239	7.373E-05	0.0000	4.242E-03	0.0005	0.000E+00	0.0000	2.354E-01	0.0266	1.063E-02	0.0012	3.748E-04	0.0000	5.025E-02	0.0057
Pu-240	3.691E-05	0.0000	4.242E-03	0.0005	0.000E+00	0.0000	2.354E-01	0.0266	1.063E-02	0.0012	3.748E-04	0.0000	5.025E-02	0.0057
Tc-99	3.145E-05	0.0000	8.226E-08	0.0000	0.000E+00	0.0000	9.000E-01	0.1018	1.049E-03	0.0001	2.853E-02	0.0032	2.072E-05	0.0000
U-234	1.008E-04	0.0000	1.305E-03	0.0001	0.000E+00	0.0000	6.963E-02	0.0079	1.182E-02	0.0013	1.912E-02	0.0022	4.017E-03	0.0005
U-235	1.892E-01	0.0214	1.216E-03	0.0001	0.000E+00	0.0000	6.585E-02	0.0075	1.117E-02	0.0013	1.806E-02	0.0020	3.797E-03	0.0004
U-238	3.766E-02	0.0043	1.167E-03	0.0001	0.000E+00	0.0000	6.611E-02	0.0075	1.123E-02	0.0013	1.815E-02	0.0021	3.814E-03	0.0004
Total	5.117E-01	0.0579	2.190E-02	0.0025	0.000E+00	0.0000	7.723E+00	0.8740	2.612E-01	0.0296	9.192E-02	0.0104	2.268E-01	0.0257

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.151E-01	0.0357
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.456E+00	0.7306
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.010E-01	0.0341
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.010E-01	0.0341
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.296E-01	0.1052
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.060E-01	0.0120
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.893E-01	0.0327
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.381E-01	0.0156
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.836E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.098E-02	0.0012	4.380E-03	0.0005	0.000E+00	0.0000	2.415E-01	0.0273	5.452E-03	0.0006	7.767E-04	0.0001	5.155E-02	0.0058
Np-237	2.734E-01	0.0310	5.334E-03	0.0006	0.000E+00	0.0000	5.904E+00	0.6686	1.991E-01	0.0225	6.517E-03	0.0007	6.302E-02	0.0071
Pu-239	7.373E-05	0.0000	4.242E-03	0.0005	0.000E+00	0.0000	2.354E-01	0.0267	1.063E-02	0.0012	3.748E-04	0.0000	5.025E-02	0.0057
Pu-240	3.690E-05	0.0000	4.241E-03	0.0005	0.000E+00	0.0000	2.354E-01	0.0267	1.063E-02	0.0012	3.747E-04	0.0000	5.024E-02	0.0057
Tc-99	3.145E-05	0.0000	8.225E-08	0.0000	0.000E+00	0.0000	8.998E-01	0.1019	1.049E-03	0.0001	2.853E-02	0.0032	2.072E-05	0.0000
U-234	1.008E-04	0.0000	1.305E-03	0.0001	0.000E+00	0.0000	6.963E-02	0.0079	1.182E-02	0.0013	1.912E-02	0.0022	4.017E-03	0.0005
U-235	1.892E-01	0.0214	1.217E-03	0.0001	0.000E+00	0.0000	6.600E-02	0.0075	1.117E-02	0.0013	1.806E-02	0.0020	3.800E-03	0.0004
U-238	3.766E-02	0.0043	1.167E-03	0.0001	0.000E+00	0.0000	6.611E-02	0.0075	1.122E-02	0.0013	1.815E-02	0.0021	3.814E-03	0.0004
Total	5.115E-01	0.0579	2.189E-02	0.0025	0.000E+00	0.0000	7.718E+00	0.8740	2.611E-01	0.0296	9.191E-02	0.0104	2.267E-01	0.0257

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.146E-01	0.0356
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.452E+00	0.7306
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.010E-01	0.0341
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.009E-01	0.0341
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.294E-01	0.1052
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.060E-01	0.0120
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.895E-01	0.0328
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.381E-01	0.0156
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.831E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.095E-02	0.0012	4.366E-03	0.0005	0.000E+00	0.0000	2.407E-01	0.0273	5.435E-03	0.0006	7.742E-04	0.0001	5.138E-02	0.0058
Np-237	2.730E-01	0.0309	5.327E-03	0.0006	0.000E+00	0.0000	5.897E+00	0.6684	1.989E-01	0.0225	6.508E-03	0.0007	6.294E-02	0.0071
Pu-239	7.372E-05	0.0000	4.241E-03	0.0005	0.000E+00	0.0000	2.354E-01	0.0267	1.063E-02	0.0012	3.748E-04	0.0000	5.025E-02	0.0057
Pu-240	3.689E-05	0.0000	4.240E-03	0.0005	0.000E+00	0.0000	2.353E-01	0.0267	1.063E-02	0.0012	3.747E-04	0.0000	5.023E-02	0.0057
Tc-99	3.144E-05	0.0000	8.222E-08	0.0000	0.000E+00	0.0000	8.995E-01	0.1020	1.049E-03	0.0001	2.852E-02	0.0032	2.071E-05	0.0000
U-234	1.009E-04	0.0000	1.305E-03	0.0001	0.000E+00	0.0000	6.962E-02	0.0079	1.182E-02	0.0013	1.912E-02	0.0022	4.017E-03	0.0005
U-235	1.892E-01	0.0214	1.217E-03	0.0001	0.000E+00	0.0000	6.629E-02	0.0075	1.117E-02	0.0013	1.806E-02	0.0020	3.806E-03	0.0004
U-238	3.766E-02	0.0043	1.167E-03	0.0001	0.000E+00	0.0000	6.610E-02	0.0075	1.122E-02	0.0013	1.815E-02	0.0021	3.814E-03	0.0004
Total	5.111E-01	0.0579	2.186E-02	0.0025	0.000E+00	0.0000	7.710E+00	0.8739	2.608E-01	0.0296	9.188E-02	0.0104	2.265E-01	0.0257

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.136E-01	0.0356
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.443E+00	0.7304
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.010E-01	0.0341
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.008E-01	0.0341
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.292E-01	0.1053
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.060E-01	0.0120
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.897E-01	0.0328
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.381E-01	0.0157
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.822E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.082E-02	0.0012	4.317E-03	0.0005	0.000E+00	0.0000	2.381E-01	0.0271	5.375E-03	0.0006	7.656E-04	0.0001	5.081E-02	0.0058
Np-237	2.718E-01	0.0309	5.303E-03	0.0006	0.000E+00	0.0000	5.870E+00	0.6679	1.979E-01	0.0225	6.479E-03	0.0007	6.265E-02	0.0071
Pu-239	7.370E-05	0.0000	4.240E-03	0.0005	0.000E+00	0.0000	2.353E-01	0.0268	1.063E-02	0.0012	3.746E-04	0.0000	5.023E-02	0.0057
Pu-240	3.686E-05	0.0000	4.237E-03	0.0005	0.000E+00	0.0000	2.351E-01	0.0268	1.062E-02	0.0012	3.743E-04	0.0000	5.019E-02	0.0057
Tc-99	3.140E-05	0.0000	8.213E-08	0.0000	0.000E+00	0.0000	8.985E-01	0.1022	1.048E-03	0.0001	2.849E-02	0.0032	2.069E-05	0.0000
U-234	1.014E-04	0.0000	1.305E-03	0.0001	0.000E+00	0.0000	6.959E-02	0.0079	1.181E-02	0.0013	1.911E-02	0.0022	4.015E-03	0.0005
U-235	1.891E-01	0.0215	1.220E-03	0.0001	0.000E+00	0.0000	6.733E-02	0.0077	1.116E-02	0.0013	1.805E-02	0.0021	3.833E-03	0.0004
U-238	3.764E-02	0.0043	1.166E-03	0.0001	0.000E+00	0.0000	6.607E-02	0.0075	1.122E-02	0.0013	1.814E-02	0.0021	3.812E-03	0.0004
Total	5.096E-01	0.0580	2.179E-02	0.0025	0.000E+00	0.0000	7.680E+00	0.8739	2.598E-01	0.0296	9.178E-02	0.0104	2.256E-01	0.0257

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.101E-01	0.0353
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.414E+00	0.7298
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.009E-01	0.0342
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.006E-01	0.0342
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.281E-01	0.1056
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.059E-01	0.0121
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.907E-01	0.0331
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.381E-01	0.0157
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.788E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.048E-02	0.0012	4.180E-03	0.0005	0.000E+00	0.0000	2.306E-01	0.0265	5.206E-03	0.0006	7.414E-04	0.0001	4.920E-02	0.0057
Np-237	2.682E-01	0.0309	5.234E-03	0.0006	0.000E+00	0.0000	5.794E+00	0.6664	1.954E-01	0.0225	6.397E-03	0.0007	6.184E-02	0.0071
Pu-239	7.364E-05	0.0000	4.236E-03	0.0005	0.000E+00	0.0000	2.351E-01	0.0270	1.062E-02	0.0012	3.743E-04	0.0000	5.019E-02	0.0058
Pu-240	3.677E-05	0.0000	4.226E-03	0.0005	0.000E+00	0.0000	2.346E-01	0.0270	1.059E-02	0.0012	3.735E-04	0.0000	5.007E-02	0.0058
Tc-99	3.131E-05	0.0000	8.187E-08	0.0000	0.000E+00	0.0000	8.957E-01	0.1030	1.044E-03	0.0001	2.840E-02	0.0033	2.063E-05	0.0000
U-234	1.057E-04	0.0000	1.303E-03	0.0001	0.000E+00	0.0000	6.951E-02	0.0080	1.180E-02	0.0014	1.908E-02	0.0022	4.011E-03	0.0005
U-235	1.890E-01	0.0217	1.237E-03	0.0001	0.000E+00	0.0000	7.042E-02	0.0081	1.115E-02	0.0013	1.803E-02	0.0021	3.933E-03	0.0005
U-238	3.759E-02	0.0043	1.165E-03	0.0001	0.000E+00	0.0000	6.599E-02	0.0076	1.120E-02	0.0013	1.812E-02	0.0021	3.807E-03	0.0004
Total	5.056E-01	0.0581	2.158E-02	0.0025	0.000E+00	0.0000	7.595E+00	0.8736	2.570E-01	0.0296	9.152E-02	0.0105	2.231E-01	0.0257

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.004E-01	0.0346
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.331E+00	0.7281
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.006E-01	0.0346
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.999E-01	0.0345
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.252E-01	0.1064
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.058E-01	0.0122
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.938E-01	0.0338
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.379E-01	0.0159
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.694E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.375E-03	0.0011	3.736E-03	0.0004	0.000E+00	0.0000	2.062E-01	0.0246	4.657E-03	0.0006	6.627E-04	0.0001	4.397E-02	0.0052
Np-237	2.562E-01	0.0306	5.001E-03	0.0006	0.000E+00	0.0000	5.535E+00	0.6607	1.866E-01	0.0223	6.117E-03	0.0007	5.907E-02	0.0071
Pu-239	7.344E-05	0.0000	4.224E-03	0.0005	0.000E+00	0.0000	2.344E-01	0.0280	1.059E-02	0.0013	3.732E-04	0.0000	5.004E-02	0.0060
Pu-240	3.647E-05	0.0000	4.191E-03	0.0005	0.000E+00	0.0000	2.326E-01	0.0278	1.050E-02	0.0013	3.704E-04	0.0000	4.965E-02	0.0059
Tc-99	3.096E-05	0.0000	8.097E-08	0.0000	0.000E+00	0.0000	8.858E-01	0.1058	1.033E-03	0.0001	2.808E-02	0.0034	2.040E-05	0.0000
U-234	1.540E-04	0.0000	1.299E-03	0.0002	0.000E+00	0.0000	6.933E-02	0.0083	1.175E-02	0.0014	1.900E-02	0.0023	3.998E-03	0.0005
U-235	1.888E-01	0.0225	1.333E-03	0.0002	0.000E+00	0.0000	8.173E-02	0.0098	1.111E-02	0.0013	1.796E-02	0.0021	4.400E-03	0.0005
U-238	3.741E-02	0.0045	1.160E-03	0.0001	0.000E+00	0.0000	6.569E-02	0.0078	1.115E-02	0.0013	1.804E-02	0.0022	3.790E-03	0.0005
Total	4.921E-01	0.0588	2.094E-02	0.0025	0.000E+00	0.0000	7.310E+00	0.8727	2.474E-01	0.0295	9.061E-02	0.0108	2.149E-01	0.0257

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.686E-01	0.0321
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.048E+00	0.7220
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.997E-01	0.0358
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.974E-01	0.0355
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.150E-01	0.1092
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.055E-01	0.0126
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.054E-01	0.0365
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.373E-01	0.0164
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.376E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.813E-03	0.0009	2.710E-03	0.0004	0.000E+00	0.0000	1.498E-01	0.0198	3.387E-03	0.0004	4.810E-04	0.0001	3.190E-02	0.0042
Np-237	2.249E-01	0.0298	4.390E-03	0.0006	0.000E+00	0.0000	4.857E+00	0.6427	1.638E-01	0.0217	5.383E-03	0.0007	5.184E-02	0.0069
Pu-239	7.285E-05	0.0000	4.188E-03	0.0006	0.000E+00	0.0000	2.324E-01	0.0308	1.050E-02	0.0014	3.701E-04	0.0000	4.962E-02	0.0066
Pu-240	3.560E-05	0.0000	4.092E-03	0.0005	0.000E+00	0.0000	2.271E-01	0.0301	1.026E-02	0.0014	3.617E-04	0.0000	4.848E-02	0.0064
Tc-99	3.000E-05	0.0000	7.844E-08	0.0000	0.000E+00	0.0000	8.582E-01	0.1136	1.001E-03	0.0001	2.721E-02	0.0036	1.976E-05	0.0000
U-234	5.625E-04	0.0001	1.287E-03	0.0002	0.000E+00	0.0000	6.964E-02	0.0092	1.163E-02	0.0015	1.882E-02	0.0025	3.972E-03	0.0005
U-235	1.886E-01	0.0250	1.645E-03	0.0002	0.000E+00	0.0000	1.142E-01	0.0151	1.101E-02	0.0015	1.776E-02	0.0024	5.842E-03	0.0008
U-238	3.692E-02	0.0049	1.145E-03	0.0002	0.000E+00	0.0000	6.486E-02	0.0086	1.101E-02	0.0015	1.781E-02	0.0024	3.742E-03	0.0005
Total	4.579E-01	0.0606	1.946E-02	0.0026	0.000E+00	0.0000	6.573E+00	0.8698	2.226E-01	0.0295	8.819E-02	0.0117	1.954E-01	0.0259

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.951E-01	0.0258
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.307E+00	0.7023
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.972E-01	0.0393
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.903E-01	0.0384
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.865E-01	0.1173
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.059E-01	0.0140
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.391E-01	0.0449
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.355E-01	0.0179
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.556E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.238E-03	0.0000	8.812E-04	0.0000	0.000E+00	0.0000	4.920E-02	0.0007	1.118E-03	0.0000	1.569E-04	0.0000	1.037E-02	0.0002
Np-237	1.424E-01	0.0021	2.785E-03	0.0000	0.000E+00	0.0000	3.074E+00	0.0448	1.037E-01	0.0015	3.453E-03	0.0001	3.283E-02	0.0005
Pu-239	7.084E-05	0.0000	4.065E-03	0.0001	0.000E+00	0.0000	2.256E-01	0.0033	1.019E-02	0.0001	3.592E-04	0.0000	4.816E-02	0.0007
Pu-240	3.274E-05	0.0000	3.763E-03	0.0001	0.000E+00	0.0000	2.088E-01	0.0030	9.431E-03	0.0001	3.330E-04	0.0000	4.458E-02	0.0006
Tc-99	2.685E-05	0.0000	7.021E-08	0.0000	0.000E+00	0.0000	7.682E-01	0.0112	8.956E-04	0.0000	2.435E-02	0.0004	1.769E-05	0.0000
U-234	4.667E-03	0.0001	1.246E-03	0.0000	0.000E+00	0.0000	7.906E-02	0.0012	1.153E-02	0.0002	1.879E-02	0.0003	4.006E-03	0.0001
U-235	1.877E-01	0.0027	2.692E-03	0.0000	0.000E+00	0.0000	2.231E-01	0.0033	1.066E-02	0.0002	1.709E-02	0.0002	1.069E-02	0.0002
U-238	3.523E-02	0.0005	1.095E-03	0.0000	0.000E+00	0.0000	6.203E-02	0.0009	1.053E-02	0.0002	1.703E-02	0.0002	3.579E-03	0.0001
Total	3.724E-01	0.0054	1.653E-02	0.0002	0.000E+00	0.0000	4.690E+00	0.0683	1.580E-01	0.0023	8.157E-02	0.0012	1.542E-01	0.0022

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.718E-03	0.0001	2.382E-03	0.0000	0.000E+00	0.0000	2.647E-04	0.0000	3.925E-05	0.0000	3.296E-06	0.0000	7.237E-02	0.0011
Np-237	4.294E+01	0.6258	1.789E+01	0.2607	0.000E+00	0.0000	1.988E+00	0.0290	2.948E-01	0.0043	2.478E-02	0.0004	6.650E+01	0.9691
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.885E-01	0.0042
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.670E-01	0.0039
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.935E-01	0.0116
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.193E-01	0.0017
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.520E-01	0.0066
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.295E-01	0.0019
Total	4.295E+01	0.6259	1.789E+01	0.2607	0.000E+00	0.0000	1.988E+00	0.0290	2.949E-01	0.0043	2.478E-02	0.0004	6.862E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)								
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
Am-241	Am-241	1.000E+00	3.151E-01	3.146E-01	3.136E-01	3.101E-01	3.003E-01	2.684E-01	1.947E-01	6.326E-02	
Am-241	Np-237+D	1.000E+00	9.850E-07	3.067E-06	7.227E-06	2.164E-05	6.158E-05	1.877E-04	4.491E-04	9.109E-03	
Am-241	U-233	1.000E+00	3.291E-14	2.027E-13	1.001E-12	8.578E-12	7.030E-11	7.197E-10	5.522E-09	1.523E-07	
Am-241	Th-229+D	1.000E+00	5.096E-18	6.879E-17	7.642E-16	1.968E-14	4.716E-13	1.612E-11	3.826E-10	9.754E-09	
Am-241	ΣDSR (j)		3.151E-01	3.146E-01	3.136E-01	3.101E-01	3.004E-01	2.686E-01	1.951E-01	7.237E-02	
Np-237+D	Np-237+D	1.000E+00	6.456E+00	6.452E+00	6.443E+00	6.414E+00	6.331E+00	6.048E+00	5.307E+00	6.650E+01	
Np-237+D	U-233	1.000E+00	2.835E-07	7.618E-07	1.709E-06	5.013E-06	1.436E-05	4.603E-05	1.281E-04	2.005E-03	
Np-237+D	Th-229+D	1.000E+00	5.984E-11	3.857E-10	1.972E-09	1.732E-08	1.444E-07	1.535E-06	1.300E-05	1.242E-04	
Np-237+D	ΣDSR (j)		6.456E+00	6.452E+00	6.443E+00	6.414E+00	6.331E+00	6.048E+00	5.307E+00	6.650E+01	
Pu-239	Pu-239	1.000E+00	3.010E-01	3.010E-01	3.010E-01	3.009E-01	3.006E-01	2.997E-01	2.972E-01	2.885E-01	
Pu-239	U-235+D	1.000E+00	1.403E-10	4.249E-10	9.946E-10	2.987E-09	8.672E-09	2.847E-08	8.421E-08	2.699E-07	
Pu-239	Pa-231	1.000E+00	2.402E-14	1.730E-13	9.251E-13	8.325E-12	7.028E-11	7.610E-10	6.742E-09	7.235E-08	
Pu-239	Ac-227+D	1.000E+00	7.805E-17	9.418E-16	9.507E-15	2.202E-13	4.524E-12	1.055E-10	1.347E-09	1.669E-08	
Pu-239	ΣDSR (j)		3.010E-01	3.010E-01	3.010E-01	3.009E-01	3.006E-01	2.997E-01	2.972E-01	2.885E-01	
Pu-240	Pu-240	4.950E-08	1.490E-08	1.490E-08	1.489E-08	1.488E-08	1.484E-08	1.472E-08	1.437E-08	1.322E-08	
Pu-240	Pu-240	1.000E+00	3.010E-01	3.009E-01	3.008E-01	3.006E-01	2.999E-01	2.974E-01	2.903E-01	2.670E-01	
Pu-240	U-236	1.000E+00	1.425E-09	4.400E-09	1.036E-08	3.120E-08	9.060E-08	2.968E-07	8.710E-07	2.717E-06	
Pu-240	Th-232	1.000E+00	7.471E-20	4.651E-19	2.319E-18	2.006E-17	1.671E-16	1.799E-15	1.586E-14	1.683E-13	
Pu-240	Ra-228+D	1.000E+00	5.785E-20	8.991E-19	1.023E-17	2.292E-16	3.682E-15	5.636E-14	5.553E-13	6.127E-12	
Pu-240	Th-228+D	1.000E+00	1.567E-21	4.110E-20	8.300E-19	3.676E-17	8.689E-16	1.550E-14	1.588E-13	1.776E-12	
Pu-240	ΣDSR (j)		3.010E-01	3.009E-01	3.008E-01	3.006E-01	2.999E-01	2.974E-01	2.903E-01	2.670E-01	
Tc-99	Tc-99	1.000E+00	9.296E-01	9.294E-01	9.292E-01	9.281E-01	9.252E-01	9.150E-01	8.865E-01	7.935E-01	
U-234	U-234	1.000E+00	1.060E-01	1.060E-01	1.060E-01	1.059E-01	1.058E-01	1.053E-01	1.038E-01	9.886E-02	
U-234	Th-230	1.000E+00	2.596E-07	7.077E-07	1.597E-06	4.709E-06	1.359E-05	4.457E-05	1.321E-04	4.279E-04	
U-234	Ra-226+D	1.000E+00	5.871E-09	4.288E-08	2.308E-07	2.082E-06	1.755E-05	1.885E-04	1.630E-03	1.609E-02	
U-234	Pb-210+D	1.000E+00	3.362E-11	3.464E-10	3.011E-09	6.155E-08	1.201E-06	2.743E-05	3.426E-04	3.913E-03	
U-234	ΣDSR (j)		1.060E-01	1.060E-01	1.060E-01	1.059E-01	1.058E-01	1.055E-01	1.059E-01	1.193E-01	
U-235+D	U-235+D	1.000E+00	2.893E-01	2.892E-01	2.892E-01	2.891E-01	2.887E-01	2.873E-01	2.835E-01	2.705E-01	
U-235+D	Pa-231	1.000E+00	7.457E-05	2.281E-04	5.356E-04	1.611E-03	4.681E-03	1.538E-02	4.554E-02	1.466E-01	
U-235+D	Ac-227+D	1.000E+00	2.899E-07	1.657E-06	7.775E-06	6.116E-05	4.177E-04	2.649E-03	1.002E-02	3.487E-02	
U-235+D	ΣDSR (j)		2.893E-01	2.895E-01	2.897E-01	2.907E-01	2.938E-01	3.054E-01	3.391E-01	4.520E-01	
U-238	U-238	5.400E-05	5.154E-06	5.153E-06	5.153E-06	5.150E-06	5.143E-06	5.119E-06	5.051E-06	4.820E-06	
U-238+D	U-238+D	9.999E-01	1.381E-01	1.381E-01	1.381E-01	1.380E-01	1.379E-01	1.372E-01	1.354E-01	1.292E-01	
U-238+D	U-234	9.999E-01	1.502E-07	4.507E-07	1.051E-06	3.153E-06	9.146E-06	2.999E-05	8.846E-05	2.808E-04	
U-238+D	Th-230	9.999E-01	2.655E-13	1.641E-12	8.175E-12	7.073E-11	5.892E-10	6.348E-09	5.614E-08	6.013E-07	
U-238+D	Ra-226+D	9.999E-01	4.066E-15	6.420E-14	7.682E-13	2.065E-11	5.060E-10	1.795E-08	4.663E-07	1.559E-05	
U-238+D	Pb-210+D	9.999E-01	2.143E-17	4.556E-16	8.333E-15	4.850E-13	2.754E-11	2.201E-09	8.979E-08	3.676E-06	
U-238+D	ΣDSR (j)		1.381E-01	1.381E-01	1.381E-01	1.380E-01	1.379E-01	1.372E-01	1.355E-01	1.295E-01	

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		7.933E+01	7.946E+01	7.971E+01	8.061E+01	8.323E+01	9.308E+01	1.281E+02	3.454E+02
Np-237		3.872E+00	3.875E+00	3.880E+00	3.898E+00	3.949E+00	4.134E+00	4.711E+00	3.759E-01
Pu-239		8.306E+01	8.306E+01	8.307E+01	8.309E+01	8.316E+01	8.341E+01	8.412E+01	8.666E+01
Pu-240		8.307E+01	8.308E+01	8.310E+01	8.317E+01	8.337E+01	8.407E+01	8.611E+01	9.364E+01
Tc-99		2.689E+01	2.690E+01	2.691E+01	2.694E+01	2.702E+01	2.732E+01	2.820E+01	3.151E+01
U-234		2.359E+02	2.359E+02	2.359E+02	2.360E+02	2.363E+02	2.369E+02	2.361E+02	2.096E+02
U-235		8.641E+01	8.637E+01	8.628E+01	8.599E+01	8.510E+01	8.187E+01	7.373E+01	5.531E+01
U-238		1.810E+02	1.810E+02	1.810E+02	1.811E+02	1.813E+02	1.821E+02	1.845E+02	1.930E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	3.151E-01	7.933E+01	1.249E-01	2.002E+02
Np-237	1.000E+00	595 ± 1	8.971E+01	2.787E-01	8.971E+01	2.787E-01
Pu-239	1.000E+00	0.000E+00	3.010E-01	8.306E+01	2.935E-01	8.519E+01
Pu-240	1.000E+00	0.000E+00	3.010E-01	8.307E+01	2.803E-01	8.921E+01
Tc-99	1.000E+00	0.000E+00	9.296E-01	2.689E+01	8.460E-01	2.955E+01
U-234	1.000E+00	1.000E+03	1.193E-01	2.096E+02	1.095E-01	2.284E+02
U-235	1.000E+00	1.000E+03	4.520E-01	5.531E+01	3.876E-01	6.449E+01
U-238	1.000E+00	0.000E+00	1.381E-01	1.810E+02	1.329E-01	1.881E+02

Summary : Hematite - Uniform CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.151E-01	3.146E-01	3.136E-01	3.101E-01	3.003E-01	2.684E-01	1.947E-01	6.326E-02
Np-237	Am-241	1.000E+00	9.850E-07	3.067E-06	7.227E-06	2.164E-05	6.158E-05	1.877E-04	4.491E-04	9.109E-03
Np-237	Np-237	1.000E+00	6.456E+00	6.452E+00	6.443E+00	6.414E+00	6.331E+00	6.048E+00	5.307E+00	6.650E+01
Np-237	ΣDOSE (j)		6.456E+00	6.452E+00	6.443E+00	6.414E+00	6.331E+00	6.048E+00	5.307E+00	6.651E+01
U-233	Am-241	1.000E+00	3.291E-14	2.027E-13	1.001E-12	8.578E-12	7.030E-11	7.197E-10	5.522E-09	1.523E-07
U-233	Np-237	1.000E+00	2.835E-07	7.618E-07	1.709E-06	5.013E-06	1.436E-05	4.603E-05	1.281E-04	2.005E-03
U-233	ΣDOSE (j)		2.835E-07	7.618E-07	1.709E-06	5.013E-06	1.436E-05	4.603E-05	1.281E-04	2.005E-03
Th-229	Am-241	1.000E+00	5.096E-18	6.879E-17	7.642E-16	1.968E-14	4.716E-13	1.612E-11	3.826E-10	9.754E-09
Th-229	Np-237	1.000E+00	5.984E-11	3.857E-10	1.972E-09	1.732E-08	1.444E-07	1.535E-06	1.300E-05	1.242E-04
Th-229	ΣDOSE (j)		5.984E-11	3.857E-10	1.972E-09	1.732E-08	1.444E-07	1.536E-06	1.300E-05	1.242E-04
Pu-239	Pu-239	1.000E+00	3.010E-01	3.010E-01	3.010E-01	3.009E-01	3.006E-01	2.997E-01	2.972E-01	2.885E-01
U-235	Pu-239	1.000E+00	1.403E-10	4.249E-10	9.946E-10	2.987E-09	8.672E-09	2.847E-08	8.421E-08	2.699E-07
U-235	U-235	1.000E+00	2.893E-01	2.892E-01	2.892E-01	2.891E-01	2.887E-01	2.873E-01	2.835E-01	2.705E-01
U-235	ΣDOSE (j)		2.893E-01	2.892E-01	2.892E-01	2.891E-01	2.887E-01	2.873E-01	2.835E-01	2.705E-01
Pa-231	Pu-239	1.000E+00	2.402E-14	1.730E-13	9.251E-13	8.325E-12	7.028E-11	7.610E-10	6.742E-09	7.235E-08
Pa-231	U-235	1.000E+00	7.457E-05	2.281E-04	5.356E-04	1.611E-03	4.681E-03	1.538E-02	4.554E-02	1.466E-01
Pa-231	ΣDOSE (j)		7.457E-05	2.281E-04	5.356E-04	1.611E-03	4.681E-03	1.538E-02	4.554E-02	1.466E-01
Ac-227	Pu-239	1.000E+00	7.805E-17	9.418E-16	9.507E-15	2.202E-13	4.524E-12	1.055E-10	1.347E-09	1.669E-08
Ac-227	U-235	1.000E+00	2.899E-07	1.657E-06	7.775E-06	6.116E-05	4.177E-04	2.649E-03	1.002E-02	3.487E-02
Ac-227	ΣDOSE (j)		2.899E-07	1.657E-06	7.775E-06	6.116E-05	4.177E-04	2.649E-03	1.002E-02	3.487E-02
Pu-240	Pu-240	4.950E-08	1.490E-08	1.490E-08	1.489E-08	1.488E-08	1.484E-08	1.472E-08	1.437E-08	1.322E-08
Pu-240	Pu-240	1.000E+00	3.010E-01	3.009E-01	3.008E-01	3.006E-01	2.999E-01	2.974E-01	2.903E-01	2.670E-01
Pu-240	ΣDOSE (j)		3.010E-01	3.009E-01	3.008E-01	3.006E-01	2.999E-01	2.974E-01	2.903E-01	2.670E-01
U-236	Pu-240	1.000E+00	1.425E-09	4.400E-09	1.036E-08	3.120E-08	9.060E-08	2.968E-07	8.710E-07	2.717E-06
Th-232	Pu-240	1.000E+00	7.471E-20	4.651E-19	2.319E-18	2.006E-17	1.671E-16	1.799E-15	1.586E-14	1.683E-13
Ra-228	Pu-240	1.000E+00	5.785E-20	8.991E-19	1.023E-17	2.292E-16	3.682E-15	5.636E-14	5.553E-13	6.127E-12
Th-228	Pu-240	1.000E+00	1.567E-21	4.110E-20	8.300E-19	3.676E-17	8.689E-16	1.550E-14	1.588E-13	1.776E-12
Tc-99	Tc-99	1.000E+00	9.296E-01	9.294E-01	9.292E-01	9.281E-01	9.252E-01	9.150E-01	8.865E-01	7.935E-01
U-234	U-234	1.000E+00	1.060E-01	1.060E-01	1.060E-01	1.059E-01	1.058E-01	1.053E-01	1.038E-01	9.886E-02
U-234	U-238	9.999E-01	1.502E-07	4.507E-07	1.051E-06	3.153E-06	9.146E-06	2.999E-05	8.846E-05	2.808E-04
U-234	ΣDOSE (j)		1.060E-01	1.060E-01	1.060E-01	1.059E-01	1.058E-01	1.053E-01	1.039E-01	9.914E-02
Th-230	U-234	1.000E+00	2.596E-07	7.077E-07	1.597E-06	4.709E-06	1.359E-05	4.457E-05	1.321E-04	4.279E-04
Th-230	U-238	9.999E-01	2.655E-13	1.641E-12	8.175E-12	7.073E-11	5.892E-10	6.348E-09	5.614E-08	6.013E-07
Th-230	ΣDOSE (j)		2.596E-07	7.077E-07	1.597E-06	4.709E-06	1.359E-05	4.457E-05	1.322E-04	4.285E-04

Summary : Hematite - Uniform CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	5.871E-09	4.288E-08	2.308E-07	2.082E-06	1.755E-05	1.885E-04	1.630E-03	1.609E-02
Ra-226	U-238	9.999E-01	4.066E-15	6.420E-14	7.682E-13	2.065E-11	5.060E-10	1.795E-08	4.663E-07	1.559E-05
Ra-226	ΣDOSE(j)		5.871E-09	4.288E-08	2.308E-07	2.082E-06	1.755E-05	1.885E-04	1.630E-03	1.611E-02
Pb-210	U-234	1.000E+00	3.362E-11	3.464E-10	3.011E-09	6.155E-08	1.201E-06	2.743E-05	3.426E-04	3.913E-03
Pb-210	U-238	9.999E-01	2.143E-17	4.556E-16	8.333E-15	4.850E-13	2.754E-11	2.201E-09	8.979E-08	3.676E-06
Pb-210	ΣDOSE(j)		3.362E-11	3.464E-10	3.011E-09	6.155E-08	1.201E-06	2.743E-05	3.427E-04	3.916E-03
U-238	U-238	5.400E-05	5.154E-06	5.153E-06	5.153E-06	5.150E-06	5.143E-06	5.119E-06	5.051E-06	4.820E-06
U-238	U-238	9.999E-01	1.381E-01	1.381E-01	1.381E-01	1.380E-01	1.379E-01	1.372E-01	1.354E-01	1.292E-01
U-238	ΣDOSE(j)		1.381E-01	1.381E-01	1.381E-01	1.380E-01	1.379E-01	1.372E-01	1.354E-01	1.292E-01

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.43 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Initial Soil Concentrations, pCi/g

Pb-210	1.000E+00

Ra-226	1.000E+00

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

M(t): 4.901E-01 4.900E-01 4.897E-01 4.884E-01 4.846E-01 4.705E-01 4.314E-01 3.181E-01

Maximum TDOSE(t): 1.225E+01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.503E-03	0.0001	2.258E-04	0.0000	0.000E+00	0.0000	1.906E+00	0.1555	1.855E-01	0.0151	2.434E-01	0.0199	1.017E-01	0.0083
Ra-226	2.765E+00	0.2257	8.849E-05	0.0000	0.000E+00	0.0000	6.560E+00	0.5354	1.196E-01	0.0098	3.485E-01	0.0284	2.034E-02	0.0017
Total	2.767E+00	0.2258	3.143E-04	0.0000	0.000E+00	0.0000	8.466E+00	0.6910	3.051E-01	0.0249	5.918E-01	0.0483	1.220E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.438E+00	0.1990
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.814E+00	0.8010
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.225E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.457E-03	0.0001	2.189E-04	0.0000	0.000E+00	0.0000	1.847E+00	0.1508	1.798E-01	0.0147	2.359E-01	0.0193	9.859E-02	0.0080
Ra-226	2.764E+00	0.2256	9.536E-05	0.0000	0.000E+00	0.0000	6.618E+00	0.5402	1.253E-01	0.0102	3.559E-01	0.0290	2.344E-02	0.0019
Total	2.766E+00	0.2258	3.143E-04	0.0000	0.000E+00	0.0000	8.466E+00	0.6910	3.052E-01	0.0249	5.918E-01	0.0483	1.220E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.363E+00	0.1929
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.887E+00	0.8071
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.225E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.369E-03	0.0001	2.057E-04	0.0000	0.000E+00	0.0000	1.736E+00	0.1418	1.690E-01	0.0138	2.217E-01	0.0181	9.264E-02	0.0076
Ra-226	2.762E+00	0.2256	1.085E-04	0.0000	0.000E+00	0.0000	6.724E+00	0.5493	1.361E-01	0.0111	3.698E-01	0.0302	2.936E-02	0.0024
Total	2.763E+00	0.2257	3.142E-04	0.0000	0.000E+00	0.0000	8.460E+00	0.6911	3.051E-01	0.0249	5.915E-01	0.0483	1.220E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.221E+00	0.1814
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.002E+01	0.8186
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.224E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.101E-03	0.0001	1.654E-04	0.0000	0.000E+00	0.0000	1.396E+00	0.1143	1.359E-01	0.0111	1.783E-01	0.0146	7.451E-02	0.0061
Ra-226	2.754E+00	0.2255	1.483E-04	0.0000	0.000E+00	0.0000	7.042E+00	0.5768	1.686E-01	0.0138	4.119E-01	0.0337	4.735E-02	0.0039
Total	2.755E+00	0.2256	3.137E-04	0.0000	0.000E+00	0.0000	8.439E+00	0.6911	3.046E-01	0.0249	5.902E-01	0.0483	1.219E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.786E+00	0.1463
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.042E+01	0.8537
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.221E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.912E-04	0.0000	8.880E-05	0.0000	0.000E+00	0.0000	7.494E-01	0.0619	7.295E-02	0.0060	9.570E-02	0.0079	3.999E-02	0.0033
Ra-226	2.730E+00	0.2254	2.232E-04	0.0000	0.000E+00	0.0000	7.624E+00	0.6293	2.298E-01	0.0190	4.905E-01	0.0405	8.126E-02	0.0067
Total	2.731E+00	0.2254	3.120E-04	0.0000	0.000E+00	0.0000	8.374E+00	0.6912	3.027E-01	0.0250	5.862E-01	0.0484	1.213E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.587E-01	0.0791
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.116E+01	0.9209
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.212E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.697E-05	0.0000	1.006E-05	0.0000	0.000E+00	0.0000	8.489E-02	0.0072	8.264E-03	0.0007	1.084E-02	0.0009	4.530E-03	0.0004
Ra-226	2.649E+00	0.2252	2.936E-04	0.0000	0.000E+00	0.0000	8.046E+00	0.6840	2.862E-01	0.0243	5.588E-01	0.0475	1.135E-01	0.0097
Total	2.649E+00	0.2252	3.037E-04	0.0000	0.000E+00	0.0000	8.131E+00	0.6913	2.945E-01	0.0250	5.697E-01	0.0484	1.181E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.086E-01	0.0092
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.165E+01	0.9908
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.176E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.329E-07	0.0000	1.996E-08	0.0000	0.000E+00	0.0000	1.684E-04	0.0000	1.640E-05	0.0000	2.151E-05	0.0000	8.989E-06	0.0000
Ra-226	2.428E+00	0.2252	2.785E-04	0.0000	0.000E+00	0.0000	7.454E+00	0.6913	2.700E-01	0.0250	5.223E-01	0.0484	1.083E-01	0.0100
Total	2.428E+00	0.2252	2.785E-04	0.0000	0.000E+00	0.0000	7.455E+00	0.6913	2.701E-01	0.0250	5.223E-01	0.0484	1.083E-01	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.155E-04	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.078E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.078E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.624E-17	0.0000	6.945E-18	0.0000	0.000E+00	0.0000	5.861E-14	0.0000	5.706E-15	0.0000	7.485E-15	0.0000	3.128E-15	0.0000
Ra-226	1.791E+00	0.2252	2.054E-04	0.0000	0.000E+00	0.0000	5.498E+00	0.6913	1.992E-01	0.0250	3.852E-01	0.0484	7.986E-02	0.0100
Total	1.791E+00	0.2252	2.054E-04	0.0000	0.000E+00	0.0000	5.498E+00	0.6913	1.992E-01	0.0250	3.852E-01	0.0484	7.986E-02	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.498E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.953E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.953E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	2.438E+00	2.363E+00	2.221E+00	1.786E+00	9.587E-01	1.086E-01	2.155E-04	7.498E-14
Ra-226+D	Ra-226+D	1.000E+00	9.741E+00	9.737E+00	9.729E+00	9.699E+00	9.615E+00	9.327E+00	8.549E+00	6.305E+00
Ra-226+D	Pb-210+D	1.000E+00	7.268E-02	1.504E-01	2.926E-01	7.253E-01	1.542E+00	2.328E+00	2.234E+00	1.648E+00
Ra-226+D	ΣDSR(j)		9.814E+00	9.887E+00	1.002E+01	1.042E+01	1.116E+01	1.165E+01	1.078E+01	7.953E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.025E+01	1.058E+01	1.126E+01	1.400E+01	2.608E+01	2.302E+02	1.160E+05	*7.634E+13	
Ra-226	2.547E+00	2.528E+00	2.495E+00	2.398E+00	2.241E+00	2.145E+00	2.318E+00	3.143E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	2.438E+00	1.025E+01	2.438E+00	1.025E+01
Ra-226	1.000E+00	86.8 ± 0.2	1.167E+01	2.143E+00	9.814E+00	2.547E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	2.438E+00	2.363E+00	2.221E+00	1.786E+00	9.587E-01	1.086E-01	2.155E-04	7.498E-14
Pb-210	Ra-226	1.000E+00	7.268E-02	1.504E-01	2.926E-01	7.253E-01	1.542E+00	2.328E+00	2.234E+00	1.648E+00
Pb-210	ΣDOSE(j)		2.511E+00	2.514E+00	2.513E+00	2.512E+00	2.500E+00	2.436E+00	2.235E+00	1.648E+00
Ra-226	Ra-226	1.000E+00	9.741E+00	9.737E+00	9.729E+00	9.699E+00	9.615E+00	9.327E+00	8.549E+00	6.305E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.40 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.534E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Summary : Hematite - Uniform Th-232+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	153375.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.195E+01	1.195E+01	1.195E+01	1.195E+01	1.195E+01	1.195E+01	1.195E+01	1.195E+01
M(t):	4.779E-01	4.780E-01	4.780E-01	4.780E-01	4.780E-01	4.780E-01	4.780E-01	4.779E-01

Maximum TDOSE(t): 1.195E+01 mrem/yr at t = 0.2543 ± 0.0005 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.543E-01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.913E+00	0.1601	8.063E-04	0.0001	0.000E+00	0.0000	6.538E+00	0.5471	1.165E-01	0.0098	3.429E-01	0.0287	2.126E-02	0.0018
Th-228	1.929E+00	0.1614	2.612E-03	0.0002	0.000E+00	0.0000	4.085E-02	0.0034	1.839E-03	0.0002	3.241E-04	0.0000	8.781E-03	0.0007
Th-232	1.588E-01	0.0133	1.626E-02	0.0014	0.000E+00	0.0000	7.701E-01	0.0644	1.708E-02	0.0014	3.046E-02	0.0025	4.066E-02	0.0034
Total	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.349E+00	0.6150	1.355E-01	0.0113	3.737E-01	0.0313	7.071E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.543E-01 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.933E+00	0.7475
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.983E+00	0.1660
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E+00	0.0865
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.784E+00	0.1493	5.754E-04	0.0000	0.000E+00	0.0000	6.734E+00	0.5636	1.199E-01	0.0100	3.535E-01	0.0296	2.106E-02	0.0018
Th-228	2.115E+00	0.1770	2.865E-03	0.0002	0.000E+00	0.0000	4.479E-02	0.0037	2.016E-03	0.0002	3.554E-04	0.0000	9.629E-03	0.0008
Th-232	1.021E-01	0.0085	1.624E-02	0.0014	0.000E+00	0.0000	5.689E-01	0.0476	1.363E-02	0.0011	2.007E-02	0.0017	4.002E-02	0.0033
Total	4.001E+00	0.3349	1.968E-02	0.0016	0.000E+00	0.0000	7.348E+00	0.6149	1.355E-01	0.0113	3.740E-01	0.0313	7.071E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.013E+00	0.7543
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.175E+00	0.1820
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.610E-01	0.0637
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.185E+00	0.1828	1.327E-03	0.0001	0.000E+00	0.0000	5.985E+00	0.5009	1.069E-01	0.0089	3.135E-01	0.0262	2.142E-02	0.0018
Th-228	1.472E+00	0.1232	1.994E-03	0.0002	0.000E+00	0.0000	3.118E-02	0.0026	1.403E-03	0.0001	2.474E-04	0.0000	6.702E-03	0.0006
Th-232	3.441E-01	0.0288	1.636E-02	0.0014	0.000E+00	0.0000	1.333E+00	0.1115	2.712E-02	0.0023	5.995E-02	0.0050	4.259E-02	0.0036
Total	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.349E+00	0.6150	1.355E-01	0.0113	3.737E-01	0.0313	7.071E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.613E+00	0.7208
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E+00	0.1267
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.823E+00	0.1525
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.381E+00	0.1993	1.943E-03	0.0002	0.000E+00	0.0000	4.717E+00	0.3947	8.465E-02	0.0071	2.465E-01	0.0206	1.985E-02	0.0017
Th-228	7.133E-01	0.0597	9.660E-04	0.0001	0.000E+00	0.0000	1.511E-02	0.0013	6.799E-04	0.0001	1.199E-04	0.0000	3.247E-03	0.0003
Th-232	9.064E-01	0.0759	1.677E-02	0.0014	0.000E+00	0.0000	2.617E+00	0.2190	5.012E-02	0.0042	1.271E-01	0.0106	4.760E-02	0.0040
Total	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.349E+00	0.6150	1.355E-01	0.0113	3.737E-01	0.0313	7.071E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.451E+00	0.6236
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.335E-01	0.0614
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.765E+00	0.3151
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.399E+00	0.1171	1.344E-03	0.0001	0.000E+00	0.0000	2.037E+00	0.1704	3.676E-02	0.0031	1.061E-01	0.0089	1.025E-02	0.0009
Th-228	5.647E-02	0.0047	7.648E-05	0.0000	0.000E+00	0.0000	1.196E-03	0.0001	5.383E-05	0.0000	9.489E-06	0.0000	2.571E-04	0.0000
Th-232	2.545E+00	0.2130	1.826E-02	0.0015	0.000E+00	0.0000	5.311E+00	0.4445	9.863E-02	0.0083	2.676E-01	0.0224	6.020E-02	0.0050
Total	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.349E+00	0.6150	1.355E-01	0.0113	3.737E-01	0.0313	7.071E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.590E+00	0.3004
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.807E-02	0.0049
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.301E+00	0.6947
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.331E-01	0.0111	1.308E-04	0.0000	0.000E+00	0.0000	1.829E-01	0.0153	3.306E-03	0.0003	9.517E-03	0.0008	9.537E-04	0.0001
Th-228	4.025E-05	0.0000	5.451E-08	0.0000	0.000E+00	0.0000	8.524E-07	0.0000	3.837E-08	0.0000	6.763E-09	0.0000	1.832E-07	0.0000
Th-232	3.868E+00	0.3237	1.955E-02	0.0016	0.000E+00	0.0000	7.166E+00	0.5997	1.321E-01	0.0111	3.642E-01	0.0305	6.975E-02	0.0058
Total	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.349E+00	0.6150	1.355E-01	0.0113	3.737E-01	0.0313	7.071E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.299E-01	0.0276
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.139E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.162E+01	0.9724
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.881E-05	0.0000	2.831E-08	0.0000	0.000E+00	0.0000	3.958E-05	0.0000	7.154E-07	0.0000	2.059E-06	0.0000	2.064E-07	0.0000
Th-228	3.892E-16	0.0000	5.270E-19	0.0000	0.000E+00	0.0000	8.242E-18	0.0000	3.710E-19	0.0000	6.539E-20	0.0000	1.772E-18	0.0000
Th-232	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.349E+00	0.6150	1.354E-01	0.0113	3.737E-01	0.0313	7.070E-02	0.0059
Total	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.349E+00	0.6150	1.354E-01	0.0113	3.737E-01	0.0313	7.070E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.140E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.002E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.745E-16	0.0000	9.577E-19	0.0000	0.000E+00	0.0000	1.339E-15	0.0000	2.420E-17	0.0000	6.966E-17	0.0000	6.982E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.348E+00	0.6150	1.354E-01	0.0113	3.737E-01	0.0313	7.070E-02	0.0059
Total	4.001E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.348E+00	0.6150	1.354E-01	0.0113	3.737E-01	0.0313	7.070E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.415E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.000E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.347E+00	0.6150	1.354E-01	0.0113	3.736E-01	0.0313	7.069E-02	0.0059
Total	4.000E+00	0.3348	1.968E-02	0.0016	0.000E+00	0.0000	7.347E+00	0.6150	1.354E-01	0.0113	3.736E-01	0.0313	7.069E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E+01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	8.570E+00	7.597E+00	5.970E+00	2.567E+00	2.303E-01	4.984E-05	1.686E-15	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	4.423E-01	1.016E+00	1.482E+00	1.023E+00	9.953E-02	2.155E-05	7.290E-16	0.000E+00
Ra-228+D	ΣDSR(j)		9.013E+00	8.613E+00	7.451E+00	3.590E+00	3.299E-01	7.140E-05	2.415E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	2.175E+00	1.514E+00	7.335E-01	5.807E-02	4.139E-05	4.002E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	2.449E-01	2.449E-01	2.449E-01	2.449E-01	2.449E-01	2.449E-01	2.449E-01	2.449E-01
Th-232	Ra-228+D	1.000E+00	4.968E-01	1.467E+00	3.095E+00	6.497E+00	8.834E+00	9.064E+00	9.064E+00	9.062E+00
Th-232	Th-228+D	1.000E+00	1.933E-02	1.105E-01	4.251E-01	1.559E+00	2.541E+00	2.640E+00	2.640E+00	2.640E+00
Th-232	ΣDSR(j)		7.610E-01	1.823E+00	3.765E+00	8.301E+00	1.162E+01	1.195E+01	1.195E+01	1.195E+01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	2.774E+00	2.903E+00	3.355E+00	6.963E+00	7.578E+01	3.502E+05	*2.726E+14	*2.726E+14	
Th-228	1.149E+01	1.651E+01	3.408E+01	4.306E+02	6.040E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	3.285E+01	1.372E+01	6.640E+00	3.012E+00	2.152E+00	2.092E+00	2.092E+00	2.093E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.2543 ± 0.0005 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	9.013E+00	2.774E+00	8.933E+00	2.799E+00
Th-228	1.000E+00	0.000E+00	2.175E+00	1.149E+01	1.983E+00	1.260E+01
Th-232	1.000E+00	107.6 ± 0.2	1.195E+01	2.092E+00	1.033E+00	2.419E+01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	8.570E+00	7.597E+00	5.970E+00	2.567E+00	2.303E-01	4.984E-05	1.686E-15	0.000E+00
Ra-228	Th-232	1.000E+00	4.968E-01	1.467E+00	3.095E+00	6.497E+00	8.834E+00	9.064E+00	9.064E+00	9.062E+00
Ra-228	ΣDOSE(j)		9.067E+00	9.064E+00	9.064E+00	9.064E+00	9.064E+00	9.064E+00	9.064E+00	9.062E+00
Th-228	Ra-228	1.000E+00	4.423E-01	1.016E+00	1.482E+00	1.023E+00	9.953E-02	2.155E-05	7.290E-16	0.000E+00
Th-228	Th-228	1.000E+00	2.175E+00	1.514E+00	7.335E-01	5.807E-02	4.139E-05	4.002E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.933E-02	1.105E-01	4.251E-01	1.559E+00	2.541E+00	2.640E+00	2.640E+00	2.640E+00
Th-228	ΣDOSE(j)		2.636E+00	2.640E+00	2.640E+00	2.640E+00	2.640E+00	2.640E+00	2.640E+00	2.640E+00
Th-232	Th-232	1.000E+00	2.449E-01	2.449E-01	2.449E-01	2.449E-01	2.449E-01	2.449E-01	2.449E-01	2.449E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.58 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Excavation Scenario

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	7.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Excavation Scenario

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.460E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.862E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Excavation Scenario

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.350E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.350E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.350E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Excavation Scenario

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 6.045E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.004E-02	0.0017	2.476E-03	0.0004	0.000E+00	0.0000	1.693E-01	0.0280	1.911E-04	0.0000	2.723E-05	0.0000	3.614E-02	0.0060
Np-237	2.478E-01	0.0410	3.007E-03	0.0005	0.000E+00	0.0000	4.126E+00	0.6826	6.961E-03	0.0012	2.278E-04	0.0000	4.405E-02	0.0073
Pu-239	6.758E-05	0.0000	2.394E-03	0.0004	0.000E+00	0.0000	1.647E-01	0.0273	3.721E-04	0.0001	1.312E-05	0.0000	3.518E-02	0.0058
Pu-240	3.541E-05	0.0000	2.394E-03	0.0004	0.000E+00	0.0000	1.647E-01	0.0273	3.720E-04	0.0001	1.312E-05	0.0000	3.517E-02	0.0058
Tc-99	2.892E-05	0.0000	4.641E-08	0.0000	0.000E+00	0.0000	6.295E-01	0.1041	3.670E-05	0.0000	9.980E-04	0.0002	1.450E-05	0.0000
U-234	9.339E-05	0.0000	7.366E-04	0.0001	0.000E+00	0.0000	4.872E-02	0.0081	4.137E-04	0.0001	6.691E-04	0.0001	2.812E-03	0.0005
U-235	1.736E-01	0.0287	6.864E-04	0.0001	0.000E+00	0.0000	4.607E-02	0.0076	3.908E-04	0.0001	6.321E-04	0.0001	2.657E-03	0.0004
U-238	3.398E-02	0.0056	6.586E-04	0.0001	0.000E+00	0.0000	4.626E-02	0.0077	3.928E-04	0.0001	6.353E-04	0.0001	2.670E-03	0.0004
Total	4.657E-01	0.0770	1.235E-02	0.0020	0.000E+00	0.0000	5.396E+00	0.8926	9.130E-03	0.0015	3.216E-03	0.0005	1.587E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.181E-01	0.0361
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.428E+00	0.7326
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.028E-01	0.0335
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.027E-01	0.0335
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.306E-01	0.1043
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.344E-02	0.0088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.241E-01	0.0371
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.460E-02	0.0140
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.045E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.003E-02	0.0017	2.472E-03	0.0004	0.000E+00	0.0000	1.689E-01	0.0281	1.908E-04	0.0000	2.718E-05	0.0000	3.608E-02	0.0060
Np-237	2.466E-01	0.0410	2.992E-03	0.0005	0.000E+00	0.0000	4.104E+00	0.6818	6.926E-03	0.0012	2.266E-04	0.0000	4.384E-02	0.0073
Pu-239	6.757E-05	0.0000	2.394E-03	0.0004	0.000E+00	0.0000	1.646E-01	0.0273	3.720E-04	0.0001	1.312E-05	0.0000	3.517E-02	0.0058
Pu-240	3.540E-05	0.0000	2.394E-03	0.0004	0.000E+00	0.0000	1.646E-01	0.0273	3.720E-04	0.0001	1.311E-05	0.0000	3.517E-02	0.0058
Tc-99	2.889E-05	0.0000	4.636E-08	0.0000	0.000E+00	0.0000	6.283E-01	0.1044	3.664E-05	0.0000	9.962E-04	0.0002	1.448E-05	0.0000
U-234	9.335E-05	0.0000	7.362E-04	0.0001	0.000E+00	0.0000	4.866E-02	0.0081	4.135E-04	0.0001	6.687E-04	0.0001	2.810E-03	0.0005
U-235	1.735E-01	0.0288	6.863E-04	0.0001	0.000E+00	0.0000	4.612E-02	0.0077	3.906E-04	0.0001	6.317E-04	0.0001	2.658E-03	0.0004
U-238	3.397E-02	0.0056	6.583E-04	0.0001	0.000E+00	0.0000	4.620E-02	0.0077	3.926E-04	0.0001	6.349E-04	0.0001	2.668E-03	0.0004
Total	4.644E-01	0.0772	1.233E-02	0.0020	0.000E+00	0.0000	5.371E+00	0.8924	9.094E-03	0.0015	3.212E-03	0.0005	1.584E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.177E-01	0.0362
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.404E+00	0.7318
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.026E-01	0.0337
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.026E-01	0.0337
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.294E-01	0.1046
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.338E-02	0.0089
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.240E-01	0.0372
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.452E-02	0.0140
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.018E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.996E-03	0.0017	2.464E-03	0.0004	0.000E+00	0.0000	1.681E-01	0.0282	1.902E-04	0.0000	2.710E-05	0.0000	3.597E-02	0.0060
Np-237	2.442E-01	0.0409	2.963E-03	0.0005	0.000E+00	0.0000	4.058E+00	0.6802	6.856E-03	0.0011	2.244E-04	0.0000	4.341E-02	0.0073
Pu-239	6.756E-05	0.0000	2.393E-03	0.0004	0.000E+00	0.0000	1.643E-01	0.0275	3.719E-04	0.0001	1.311E-05	0.0000	3.516E-02	0.0059
Pu-240	3.539E-05	0.0000	2.393E-03	0.0004	0.000E+00	0.0000	1.643E-01	0.0275	3.718E-04	0.0001	1.311E-05	0.0000	3.515E-02	0.0059
Tc-99	2.882E-05	0.0000	4.625E-08	0.0000	0.000E+00	0.0000	6.260E-01	0.1049	3.651E-05	0.0000	9.926E-04	0.0002	1.445E-05	0.0000
U-234	9.331E-05	0.0000	7.355E-04	0.0001	0.000E+00	0.0000	4.855E-02	0.0081	4.130E-04	0.0001	6.680E-04	0.0001	2.807E-03	0.0005
U-235	1.734E-01	0.0291	6.860E-04	0.0001	0.000E+00	0.0000	4.623E-02	0.0077	3.902E-04	0.0001	6.311E-04	0.0001	2.660E-03	0.0004
U-238	3.393E-02	0.0057	6.577E-04	0.0001	0.000E+00	0.0000	4.610E-02	0.0077	3.922E-04	0.0001	6.342E-04	0.0001	2.666E-03	0.0004
Total	4.618E-01	0.0774	1.229E-02	0.0021	0.000E+00	0.0000	5.322E+00	0.8920	9.021E-03	0.0015	3.204E-03	0.0005	1.578E-01	0.0265

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.168E-01	0.0363
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.356E+00	0.7301
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.023E-01	0.0339
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.023E-01	0.0339
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.271E-01	0.1051
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.326E-02	0.0089
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.240E-01	0.0375
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.438E-02	0.0141
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.966E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.884E-03	0.0017	2.436E-03	0.0004	0.000E+00	0.0000	1.654E-01	0.0286	1.881E-04	0.0000	2.679E-05	0.0000	3.556E-02	0.0061
Np-237	2.361E-01	0.0408	2.864E-03	0.0005	0.000E+00	0.0000	3.904E+00	0.6746	6.616E-03	0.0011	2.166E-04	0.0000	4.196E-02	0.0072
Pu-239	6.750E-05	0.0000	2.391E-03	0.0004	0.000E+00	0.0000	1.634E-01	0.0282	3.715E-04	0.0001	1.310E-05	0.0000	3.513E-02	0.0061
Pu-240	3.534E-05	0.0000	2.389E-03	0.0004	0.000E+00	0.0000	1.633E-01	0.0282	3.712E-04	0.0001	1.309E-05	0.0000	3.510E-02	0.0061
Tc-99	2.859E-05	0.0000	4.588E-08	0.0000	0.000E+00	0.0000	6.181E-01	0.1068	3.604E-05	0.0000	9.800E-04	0.0002	1.433E-05	0.0000
U-234	9.348E-05	0.0000	7.331E-04	0.0001	0.000E+00	0.0000	4.815E-02	0.0083	4.114E-04	0.0001	6.654E-04	0.0001	2.798E-03	0.0005
U-235	1.728E-01	0.0299	6.858E-04	0.0001	0.000E+00	0.0000	4.660E-02	0.0081	3.887E-04	0.0001	6.287E-04	0.0001	2.671E-03	0.0005
U-238	3.381E-02	0.0058	6.554E-04	0.0001	0.000E+00	0.0000	4.572E-02	0.0079	3.906E-04	0.0001	6.318E-04	0.0001	2.656E-03	0.0005
Total	4.528E-01	0.0782	1.215E-02	0.0021	0.000E+00	0.0000	5.155E+00	0.8907	8.773E-03	0.0015	3.175E-03	0.0005	1.559E-01	0.0269

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.135E-01	0.0369
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.192E+00	0.7243
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.014E-01	0.0348
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.012E-01	0.0348
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.191E-01	0.1070
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.285E-02	0.0091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.237E-01	0.0387
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.387E-02	0.0145
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.788E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.570E-03	0.0018	2.359E-03	0.0004	0.000E+00	0.0000	1.581E-01	0.0298	1.820E-04	0.0000	2.593E-05	0.0000	3.443E-02	0.0065
Np-237	2.142E-01	0.0403	2.599E-03	0.0005	0.000E+00	0.0000	3.495E+00	0.6580	5.975E-03	0.0011	1.958E-04	0.0000	3.807E-02	0.0072
Pu-239	6.732E-05	0.0000	2.385E-03	0.0004	0.000E+00	0.0000	1.608E-01	0.0303	3.704E-04	0.0001	1.306E-05	0.0000	3.504E-02	0.0066
Pu-240	3.519E-05	0.0000	2.379E-03	0.0004	0.000E+00	0.0000	1.604E-01	0.0302	3.695E-04	0.0001	1.303E-05	0.0000	3.496E-02	0.0066
Tc-99	2.793E-05	0.0000	4.483E-08	0.0000	0.000E+00	0.0000	5.958E-01	0.1122	3.475E-05	0.0000	9.448E-04	0.0002	1.401E-05	0.0000
U-234	9.656E-05	0.0000	7.261E-04	0.0001	0.000E+00	0.0000	4.705E-02	0.0089	4.068E-04	0.0001	6.582E-04	0.0001	2.771E-03	0.0005
U-235	1.712E-01	0.0322	6.894E-04	0.0001	0.000E+00	0.0000	4.768E-02	0.0090	3.845E-04	0.0001	6.220E-04	0.0001	2.718E-03	0.0005
U-238	3.348E-02	0.0063	6.489E-04	0.0001	0.000E+00	0.0000	4.466E-02	0.0084	3.863E-04	0.0001	6.250E-04	0.0001	2.630E-03	0.0005
Total	4.286E-01	0.0807	1.179E-02	0.0022	0.000E+00	0.0000	4.709E+00	0.8866	8.109E-03	0.0015	3.098E-03	0.0006	1.506E-01	0.0284

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.046E-01	0.0385
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.756E+00	0.7071
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.987E-01	0.0374
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.982E-01	0.0373
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.969E-01	0.1124
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.170E-02	0.0097
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.233E-01	0.0420
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.243E-02	0.0155
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.312E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.549E-03	0.0021	2.106E-03	0.0005	0.000E+00	0.0000	1.345E-01	0.0338	1.625E-04	0.0000	2.313E-05	0.0000	3.074E-02	0.0077
Np-237	1.524E-01	0.0383	1.849E-03	0.0005	0.000E+00	0.0000	2.368E+00	0.5953	4.182E-03	0.0011	1.376E-04	0.0000	2.709E-02	0.0068
Pu-239	6.672E-05	0.0000	2.363E-03	0.0006	0.000E+00	0.0000	1.517E-01	0.0381	3.666E-04	0.0001	1.293E-05	0.0000	3.472E-02	0.0087
Pu-240	3.468E-05	0.0000	2.345E-03	0.0006	0.000E+00	0.0000	1.506E-01	0.0378	3.637E-04	0.0001	1.283E-05	0.0000	3.445E-02	0.0087
Tc-99	2.576E-05	0.0000	4.134E-08	0.0000	0.000E+00	0.0000	5.233E-01	0.1315	3.052E-05	0.0000	8.300E-04	0.0002	1.291E-05	0.0000
U-234	1.368E-04	0.0000	7.022E-04	0.0002	0.000E+00	0.0000	4.336E-02	0.0109	3.913E-04	0.0001	6.338E-04	0.0002	2.680E-03	0.0007
U-235	1.659E-01	0.0417	7.222E-04	0.0002	0.000E+00	0.0000	5.131E-02	0.0129	3.702E-04	0.0001	5.992E-04	0.0002	2.958E-03	0.0007
U-238	3.233E-02	0.0081	6.268E-04	0.0002	0.000E+00	0.0000	4.109E-02	0.0103	3.716E-04	0.0001	6.018E-04	0.0002	2.541E-03	0.0006
Total	3.595E-01	0.0904	1.071E-02	0.0027	0.000E+00	0.0000	3.464E+00	0.8707	6.238E-03	0.0016	2.851E-03	0.0007	1.352E-01	0.0340

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.760E-01	0.0442
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.554E+00	0.6419
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.893E-01	0.0476
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.878E-01	0.0472
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.242E-01	0.1318
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.791E-02	0.0120
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.219E-01	0.0558
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.756E-02	0.0195
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.979E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.190E-03	0.0032	1.524E-03	0.0008	0.000E+00	0.0000	8.345E-02	0.0428	1.173E-04	0.0001	1.670E-05	0.0000	2.224E-02	0.0114
Np-237	5.764E-02	0.0296	6.998E-04	0.0004	0.000E+00	0.0000	7.676E-01	0.3938	1.506E-03	0.0008	5.036E-05	0.0000	1.025E-02	0.0053
Pu-239	6.503E-05	0.0000	2.302E-03	0.0012	0.000E+00	0.0000	1.267E-01	0.0650	3.559E-04	0.0002	1.256E-05	0.0000	3.382E-02	0.0173
Pu-240	3.327E-05	0.0000	2.249E-03	0.0012	0.000E+00	0.0000	1.238E-01	0.0635	3.477E-04	0.0002	1.228E-05	0.0000	3.304E-02	0.0170
Tc-99	2.044E-05	0.0000	3.279E-08	0.0000	0.000E+00	0.0000	3.558E-01	0.1825	2.077E-05	0.0000	5.649E-04	0.0003	1.025E-05	0.0000
U-234	4.813E-04	0.0002	6.384E-04	0.0003	0.000E+00	0.0000	3.431E-02	0.0176	3.511E-04	0.0002	5.706E-04	0.0003	2.444E-03	0.0013
U-235	1.522E-01	0.0781	8.292E-04	0.0004	0.000E+00	0.0000	5.760E-02	0.0296	3.326E-04	0.0002	5.387E-04	0.0003	3.671E-03	0.0019
U-238	2.927E-02	0.0150	5.678E-04	0.0003	0.000E+00	0.0000	3.190E-02	0.0164	3.325E-04	0.0002	5.401E-04	0.0003	2.301E-03	0.0012
Total	2.458E-01	0.1261	8.810E-03	0.0045	0.000E+00	0.0000	1.581E+00	0.8112	3.364E-03	0.0017	2.306E-03	0.0012	1.078E-01	0.0553

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.135E-01	0.0582
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.378E-01	0.4298
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.633E-01	0.0838
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.595E-01	0.0818
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.564E-01	0.1828
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.880E-02	0.0199
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.151E-01	0.1104
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.490E-02	0.0333
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.949E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.996E-03	0.0042	4.909E-04	0.0010	0.000E+00	0.0000	1.120E-02	0.0238	3.733E-05	0.0001	5.330E-06	0.0000	7.165E-03	0.0152
Np-237	1.974E-03	0.0042	2.434E-05	0.0001	0.000E+00	0.0000	1.064E-02	0.0226	4.160E-05	0.0001	1.820E-06	0.0000	3.445E-04	0.0007
Pu-239	6.044E-05	0.0001	2.100E-03	0.0045	0.000E+00	0.0000	4.815E-02	0.1023	3.207E-04	0.0007	1.136E-05	0.0000	3.086E-02	0.0656
Pu-240	2.888E-05	0.0001	1.944E-03	0.0041	0.000E+00	0.0000	4.457E-02	0.0947	2.969E-04	0.0006	1.052E-05	0.0000	2.856E-02	0.0607
Tc-99	9.218E-06	0.0000	1.458E-08	0.0000	0.000E+00	0.0000	6.589E-02	0.1401	3.874E-06	0.0000	1.056E-04	0.0002	4.556E-06	0.0000
U-234	3.640E-03	0.0077	4.594E-04	0.0010	0.000E+00	0.0000	1.267E-02	0.0269	2.476E-04	0.0005	4.083E-04	0.0009	1.858E-03	0.0039
U-235	1.151E-01	0.2446	1.111E-03	0.0024	0.000E+00	0.0000	3.901E-02	0.0829	2.290E-04	0.0005	3.714E-04	0.0008	5.560E-03	0.0118
U-238	2.095E-02	0.0445	4.016E-04	0.0009	0.000E+00	0.0000	9.396E-03	0.0200	2.251E-04	0.0005	3.695E-04	0.0008	1.627E-03	0.0035
Total	1.437E-01	0.3055	6.531E-03	0.0139	0.000E+00	0.0000	2.415E-01	0.5134	1.402E-03	0.0030	1.284E-03	0.0027	7.598E-02	0.1615

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.090E-02	0.0444
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.303E-02	0.0277
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.150E-02	0.1732
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.541E-02	0.1603
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.602E-02	0.1403
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.929E-02	0.0410
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.613E-01	0.3430
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.297E-02	0.0701
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.705E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.181E-01	2.177E-01	2.167E-01	2.135E-01	2.046E-01	1.759E-01	1.134E-01	2.087E-02
Am-241	Np-237+D	1.000E+00	6.790E-07	2.103E-06	4.925E-06	1.446E-05	3.896E-05	9.825E-05	1.380E-04	3.200E-05
Am-241	U-233	1.000E+00	1.763E-14	1.050E-13	5.089E-13	4.257E-12	3.332E-11	2.934E-10	1.480E-09	2.145E-09
Am-241	Th-229+D	1.000E+00	3.808E-18	5.285E-17	5.946E-16	1.530E-14	3.579E-13	1.116E-11	2.057E-10	2.440E-09
Am-241	ΣDSR (j)		2.181E-01	2.177E-01	2.168E-01	2.135E-01	2.046E-01	1.760E-01	1.135E-01	2.090E-02
Np-237+D	Np-237+D	1.000E+00	4.428E+00	4.404E+00	4.356E+00	4.192E+00	3.756E+00	2.554E+00	8.377E-01	1.299E-02
Np-237+D	U-233	1.000E+00	1.485E-07	3.892E-07	8.605E-07	2.462E-06	6.646E-06	1.744E-05	2.825E-05	1.293E-05
Np-237+D	Th-229+D	1.000E+00	4.526E-11	2.987E-10	1.539E-09	1.343E-08	1.084E-07	1.025E-06	6.367E-06	2.539E-05
Np-237+D	ΣDSR (j)		4.428E+00	4.404E+00	4.356E+00	4.192E+00	3.756E+00	2.554E+00	8.378E-01	1.303E-02
Pu-239	Pu-239	1.000E+00	2.028E-01	2.026E-01	2.023E-01	2.014E-01	1.987E-01	1.893E-01	1.633E-01	8.150E-02
Pu-239	U-235+D	1.000E+00	1.093E-10	3.297E-10	7.700E-10	2.305E-09	6.637E-09	2.119E-08	5.787E-08	1.419E-07
Pu-239	Pa-231	1.000E+00	1.665E-14	1.205E-13	6.448E-13	5.775E-12	4.795E-11	4.888E-10	3.592E-09	1.483E-08
Pu-239	Ac-227+D	1.000E+00	5.683E-17	6.937E-16	7.049E-15	1.635E-13	3.330E-12	7.483E-11	8.542E-10	6.831E-09
Pu-239	ΣDSR (j)		2.028E-01	2.026E-01	2.023E-01	2.014E-01	1.987E-01	1.893E-01	1.633E-01	8.150E-02
Pu-240	Pu-240	4.950E-08	1.003E-08	1.003E-08	1.001E-08	9.959E-09	9.810E-09	9.295E-09	7.894E-09	3.733E-09
Pu-240	Pu-240	1.000E+00	2.027E-01	2.026E-01	2.023E-01	2.012E-01	1.982E-01	1.878E-01	1.595E-01	7.541E-02
Pu-240	U-236	1.000E+00	7.204E-10	2.218E-09	5.210E-09	1.559E-08	4.449E-08	1.369E-07	3.320E-07	4.139E-07
Pu-240	Th-232	1.000E+00	4.744E-20	3.018E-19	1.521E-18	1.320E-17	1.087E-16	1.114E-15	8.463E-15	4.570E-14
Pu-240	Ra-228+D	1.000E+00	4.093E-20	6.307E-19	7.136E-18	1.588E-16	2.513E-15	3.660E-14	3.099E-13	1.726E-12
Pu-240	Th-228+D	1.000E+00	1.346E-21	3.593E-20	7.342E-19	3.275E-17	7.734E-16	1.363E-14	1.344E-13	1.302E-12
Pu-240	ΣDSR (j)		2.027E-01	2.026E-01	2.023E-01	2.012E-01	1.982E-01	1.878E-01	1.595E-01	7.541E-02
Tc-99	Tc-99	1.000E+00	6.306E-01	6.294E-01	6.271E-01	6.191E-01	5.969E-01	5.242E-01	3.564E-01	6.602E-02
U-234	U-234	1.000E+00	5.344E-02	5.338E-02	5.326E-02	5.285E-02	5.168E-02	4.773E-02	3.758E-02	1.267E-02
U-234	Th-230	1.000E+00	1.672E-07	4.650E-07	1.056E-06	3.109E-06	8.854E-06	2.757E-05	6.988E-05	1.130E-04
U-234	Ra-226+D	1.000E+00	4.322E-09	3.132E-08	1.678E-07	1.505E-06	1.253E-05	1.292E-04	9.867E-04	5.773E-03
U-234	Pb-210+D	1.000E+00	2.121E-11	2.124E-10	1.805E-09	3.607E-08	6.876E-07	1.479E-05	1.552E-04	7.350E-04
U-234	ΣDSR (j)		5.344E-02	5.338E-02	5.326E-02	5.285E-02	5.170E-02	4.791E-02	3.880E-02	1.929E-02
U-235+D	U-235+D	1.000E+00	2.240E-01	2.239E-01	2.236E-01	2.226E-01	2.198E-01	2.102E-01	1.850E-01	1.191E-01
U-235+D	Pa-231	1.000E+00	5.186E-05	1.592E-04	3.736E-04	1.118E-03	3.189E-03	9.825E-03	2.389E-02	2.860E-02
U-235+D	Ac-227+D	1.000E+00	2.122E-07	1.226E-06	5.779E-06	4.544E-05	3.073E-04	1.872E-03	6.267E-03	1.360E-02
U-235+D	ΣDSR (j)		2.241E-01	2.240E-01	2.240E-01	2.237E-01	2.233E-01	2.219E-01	2.151E-01	1.613E-01
U-238	U-238	5.400E-05	2.597E-06	2.594E-06	2.588E-06	2.568E-06	2.511E-06	2.320E-06	1.827E-06	6.159E-07
U-238+D	U-238+D	9.999E-01	8.459E-02	8.452E-02	8.437E-02	8.387E-02	8.243E-02	7.754E-02	6.487E-02	3.293E-02
U-238+D	U-234	9.999E-01	7.573E-08	2.270E-07	5.285E-07	1.573E-06	4.469E-06	1.360E-05	3.203E-05	3.597E-05
U-238+D	Th-230	9.999E-01	1.684E-13	1.066E-12	5.372E-12	4.657E-11	3.827E-10	3.898E-09	2.905E-08	1.474E-07
U-238+D	Ra-226+D	9.999E-01	3.005E-15	4.700E-14	5.591E-13	1.492E-11	3.606E-10	1.221E-08	2.764E-07	5.210E-06
U-238+D	Pb-210+D	9.999E-01	1.365E-17	2.818E-16	5.029E-15	2.850E-13	1.576E-11	1.181E-09	3.990E-08	6.446E-07
U-238+D	ΣDSR (j)		8.459E-02	8.452E-02	8.437E-02	8.387E-02	8.243E-02	7.756E-02	6.490E-02	3.297E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		1.146E+02	1.148E+02	1.153E+02	1.171E+02	1.222E+02	1.420E+02	2.202E+02	1.196E+03
Np-237		5.645E+00	5.676E+00	5.739E+00	5.964E+00	6.656E+00	9.789E+00	2.984E+01	1.919E+03
Pu-239		1.233E+02	1.234E+02	1.236E+02	1.241E+02	1.258E+02	1.321E+02	1.531E+02	3.068E+02
Pu-240		1.233E+02	1.234E+02	1.236E+02	1.243E+02	1.261E+02	1.331E+02	1.568E+02	3.315E+02
Tc-99		3.965E+01	3.972E+01	3.987E+01	4.038E+01	4.189E+01	4.769E+01	7.014E+01	3.787E+02
U-234		4.678E+02	4.683E+02	4.694E+02	4.730E+02	4.835E+02	5.219E+02	6.444E+02	1.296E+03
U-235		1.116E+02	1.116E+02	1.116E+02	1.117E+02	1.120E+02	1.127E+02	1.162E+02	1.549E+02
U-238		2.955E+02	2.958E+02	2.963E+02	2.981E+02	3.033E+02	3.223E+02	3.852E+02	7.582E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	0.000E+00	2.181E-01	1.146E+02	2.181E-01	1.146E+02
Np-237	1.000E+00	0.000E+00	4.428E+00	5.645E+00	4.428E+00	5.645E+00
Pu-239	1.000E+00	0.000E+00	2.028E-01	1.233E+02	2.028E-01	1.233E+02
Pu-240	1.000E+00	0.000E+00	2.027E-01	1.233E+02	2.027E-01	1.233E+02
Tc-99	1.000E+00	0.000E+00	6.306E-01	3.965E+01	6.306E-01	3.965E+01
U-234	1.000E+00	0.000E+00	5.344E-02	4.678E+02	5.344E-02	4.678E+02
U-235	1.000E+00	0.000E+00	2.241E-01	1.116E+02	2.241E-01	1.116E+02
U-238	1.000E+00	0.000E+00	8.460E-02	2.955E+02	8.460E-02	2.955E+02

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Branch Fraction Indicated										
Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.181E-01	2.177E-01	2.167E-01	2.135E-01	2.046E-01	1.759E-01	1.134E-01	2.087E-02
Np-237	Am-241	1.000E+00	6.790E-07	2.103E-06	4.925E-06	1.446E-05	3.896E-05	9.825E-05	1.380E-04	3.200E-05
Np-237	Np-237	1.000E+00	4.428E+00	4.404E+00	4.356E+00	4.192E+00	3.756E+00	2.554E+00	8.377E-01	1.299E-02
Np-237	ΣDOSE (j)		4.428E+00	4.404E+00	4.356E+00	4.192E+00	3.756E+00	2.554E+00	8.379E-01	1.302E-02
U-233	Am-241	1.000E+00	1.763E-14	1.050E-13	5.089E-13	4.257E-12	3.332E-11	2.934E-10	1.480E-09	2.145E-09
U-233	Np-237	1.000E+00	1.485E-07	3.892E-07	8.605E-07	2.462E-06	6.646E-06	1.744E-05	2.825E-05	1.293E-05
U-233	ΣDOSE (j)		1.485E-07	3.892E-07	8.605E-07	2.462E-06	6.646E-06	1.744E-05	2.825E-05	1.293E-05
Th-229	Am-241	1.000E+00	3.808E-18	5.285E-17	5.946E-16	1.530E-14	3.579E-13	1.116E-11	2.057E-10	2.440E-09
Th-229	Np-237	1.000E+00	4.526E-11	2.987E-10	1.539E-09	1.343E-08	1.084E-07	1.025E-06	6.367E-06	2.539E-05
Th-229	ΣDOSE (j)		4.526E-11	2.987E-10	1.539E-09	1.343E-08	1.084E-07	1.025E-06	6.367E-06	2.539E-05
Pu-239	Pu-239	1.000E+00	2.028E-01	2.026E-01	2.023E-01	2.014E-01	1.987E-01	1.893E-01	1.633E-01	8.150E-02
U-235	Pu-239	1.000E+00	1.093E-10	3.297E-10	7.700E-10	2.305E-09	6.637E-09	2.119E-08	5.787E-08	1.419E-07
U-235	U-235	1.000E+00	2.240E-01	2.239E-01	2.236E-01	2.226E-01	2.198E-01	2.102E-01	1.850E-01	1.191E-01
U-235	ΣDOSE (j)		2.240E-01	2.239E-01	2.236E-01	2.226E-01	2.198E-01	2.102E-01	1.850E-01	1.191E-01
Pa-231	Pu-239	1.000E+00	1.665E-14	1.205E-13	6.448E-13	5.775E-12	4.795E-11	4.888E-10	3.592E-09	1.483E-08
Pa-231	U-235	1.000E+00	5.186E-05	1.592E-04	3.736E-04	1.118E-03	3.189E-03	9.825E-03	2.389E-02	2.860E-02
Pa-231	ΣDOSE (j)		5.186E-05	1.592E-04	3.736E-04	1.118E-03	3.189E-03	9.825E-03	2.389E-02	2.860E-02
Ac-227	Pu-239	1.000E+00	5.683E-17	6.937E-16	7.049E-15	1.635E-13	3.330E-12	7.483E-11	8.542E-10	6.831E-09
Ac-227	U-235	1.000E+00	2.122E-07	1.226E-06	5.779E-06	4.544E-05	3.073E-04	1.872E-03	6.267E-03	1.360E-02
Ac-227	ΣDOSE (j)		2.122E-07	1.226E-06	5.779E-06	4.544E-05	3.073E-04	1.872E-03	6.267E-03	1.360E-02
Pu-240	Pu-240	4.950E-08	1.003E-08	1.003E-08	1.001E-08	9.959E-09	9.810E-09	9.295E-09	7.894E-09	3.733E-09
Pu-240	Pu-240	1.000E+00	2.027E-01	2.026E-01	2.023E-01	2.012E-01	1.982E-01	1.878E-01	1.595E-01	7.541E-02
Pu-240	ΣDOSE (j)		2.027E-01	2.026E-01	2.023E-01	2.012E-01	1.982E-01	1.878E-01	1.595E-01	7.541E-02
U-236	Pu-240	1.000E+00	7.204E-10	2.218E-09	5.210E-09	1.559E-08	4.449E-08	1.369E-07	3.320E-07	4.139E-07
Th-232	Pu-240	1.000E+00	4.744E-20	3.018E-19	1.521E-18	1.320E-17	1.087E-16	1.114E-15	8.463E-15	4.570E-14
Ra-228	Pu-240	1.000E+00	4.093E-20	6.307E-19	7.136E-18	1.588E-16	2.513E-15	3.660E-14	3.099E-13	1.726E-12
Th-228	Pu-240	1.000E+00	1.346E-21	3.593E-20	7.342E-19	3.275E-17	7.734E-16	1.363E-14	1.344E-13	1.302E-12
Tc-99	Tc-99	1.000E+00	6.306E-01	6.294E-01	6.271E-01	6.191E-01	5.969E-01	5.242E-01	3.564E-01	6.602E-02
U-234	U-234	1.000E+00	5.344E-02	5.338E-02	5.326E-02	5.285E-02	5.168E-02	4.773E-02	3.758E-02	1.267E-02
U-234	U-238	9.999E-01	7.573E-08	2.270E-07	5.285E-07	1.573E-06	4.469E-06	1.360E-05	3.203E-05	3.597E-05
U-234	ΣDOSE (j)		5.344E-02	5.338E-02	5.326E-02	5.285E-02	5.169E-02	4.775E-02	3.762E-02	1.270E-02
Th-230	U-234	1.000E+00	1.672E-07	4.650E-07	1.056E-06	3.109E-06	8.854E-06	2.757E-05	6.988E-05	1.130E-04
Th-230	U-238	9.999E-01	1.684E-13	1.066E-12	5.372E-12	4.657E-11	3.827E-10	3.898E-09	2.905E-08	1.474E-07
Th-230	ΣDOSE (j)		1.672E-07	4.650E-07	1.056E-06	3.109E-06	8.855E-06	2.757E-05	6.991E-05	1.132E-04

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	4.322E-09	3.132E-08	1.678E-07	1.505E-06	1.253E-05	1.292E-04	9.867E-04	5.773E-03
Ra-226	U-238	9.999E-01	3.005E-15	4.700E-14	5.591E-13	1.492E-11	3.606E-10	1.221E-08	2.764E-07	5.210E-06
Ra-226	ΣDOSE(j)		4.322E-09	3.132E-08	1.678E-07	1.505E-06	1.253E-05	1.292E-04	9.870E-04	5.778E-03
Pb-210	U-234	1.000E+00	2.121E-11	2.124E-10	1.805E-09	3.607E-08	6.876E-07	1.479E-05	1.552E-04	7.350E-04
Pb-210	U-238	9.999E-01	1.365E-17	2.818E-16	5.029E-15	2.850E-13	1.576E-11	1.181E-09	3.990E-08	6.446E-07
Pb-210	ΣDOSE(j)		2.121E-11	2.124E-10	1.805E-09	3.607E-08	6.876E-07	1.480E-05	1.552E-04	7.357E-04
U-238	U-238	5.400E-05	2.597E-06	2.594E-06	2.588E-06	2.568E-06	2.511E-06	2.320E-06	1.827E-06	6.159E-07
U-238	U-238	9.999E-01	8.459E-02	8.452E-02	8.437E-02	8.387E-02	8.243E-02	7.754E-02	6.487E-02	3.293E-02
U-238	ΣDOSE(j)		8.460E-02	8.452E-02	8.438E-02	8.387E-02	8.243E-02	7.755E-02	6.487E-02	3.293E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Excavation Scenario

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.839E-01	9.526E-01	8.506E-01	6.154E-01	1.982E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.229E-07	9.623E-07	3.136E-06	8.820E-06	2.353E-05	3.823E-05	1.902E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.149E-01	2.325E-01	7.733E-03
Np-237	ΣS(j):		1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.150E-01	2.326E-01	7.752E-03
U-233	Am-241	1.000E+00	0.000E+00	7.066E-13	6.330E-12	6.920E-11	5.946E-10	5.635E-09	3.290E-08	9.937E-08
U-233	Np-237	1.000E+00	0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.992E-04
U-233	ΣS(j):		0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.993E-04
Th-229	Am-241	1.000E+00	0.000E+00	2.225E-17	5.987E-16	2.190E-14	5.710E-13	1.874E-11	3.647E-10	5.072E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Th-229	ΣS(j):		0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.961E-01	9.870E-01	9.615E-01	8.772E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.846E-10	2.952E-09	9.818E-09	2.927E-08	9.544E-08	2.690E-07	7.232E-07
U-235	U-235	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
U-235	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.370E-14	1.039E-12	9.310E-12	1.017E-10	8.731E-10	8.235E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.913E-15	1.021E-13	2.374E-12	5.715E-11	7.109E-10	7.753E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.940E-08	4.919E-08	4.848E-08	4.650E-08	4.020E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.959E-08	8.871E-08	2.950E-07	8.787E-07	2.858E-06	7.991E-06	2.087E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.300E-19	6.567E-18	7.285E-17	6.526E-16	7.132E-15	6.126E-14	5.797E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.251E-19	2.222E-17	3.892E-16	6.056E-15	5.806E-14	5.711E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.164E-17	3.121E-16	5.709E-15	5.701E-14	5.683E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.988E-01	9.965E-01	9.885E-01	9.659E-01	8.907E-01	7.066E-01	3.142E-01
U-234	U-234	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.851E-01	9.512E-01	8.605E-01	6.060E-01
U-234	U-238	9.999E-01	0.000E+00	2.833E-06	8.492E-06	2.821E-05	8.378E-05	2.697E-04	7.321E-04	1.720E-03
U-234	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.775E-04	2.503E-03	7.040E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.147E-10	1.272E-09	1.137E-08	1.234E-07	1.039E-06	9.175E-06
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.777E-04	2.504E-03	7.049E-03

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.595E-04	1.425E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.969E-14	1.836E-12	4.921E-11	1.777E-09	4.462E-08	1.286E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.596E-04	1.427E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.340E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.422E-17	1.137E-15	1.343E-13	9.632E-12	8.277E-10	3.312E-08	1.174E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.341E-03
U-238	U-238	5.400E-05	5.400E-05	5.397E-05	5.392E-05	5.373E-05	5.320E-05	5.138E-05	4.651E-05	3.282E-05
U-238	U-238	9.999E-01	9.999E-01	9.994E-01	9.985E-01	9.950E-01	9.851E-01	9.514E-01	8.612E-01	6.077E-01
U-238	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.50 seconds

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Total Dose Components	
Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
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Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	7.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.350E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.350E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.350E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Excavation Scenario - Ra-226+C

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	700.00 square meters	Pb-210	1.000E+00
Thickness:	0.90 meters	Ra-226	1.000E+00
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	8.542E+00	8.537E+00	8.522E+00	8.469E+00	8.319E+00	7.801E+00	6.441E+00	2.941E+00
M(t):	3.417E-01	3.415E-01	3.409E-01	3.388E-01	3.328E-01	3.120E-01	2.576E-01	1.176E-01

Maximum TDOSE(t): 8.542E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.368E-03	0.0002	1.275E-04	0.0000	0.000E+00	0.0000	1.333E+00	0.1561	6.493E-03	0.0008	8.518E-03	0.0010	7.119E-02	0.0083
Ra-226	2.500E+00	0.2926	4.995E-05	0.0000	0.000E+00	0.0000	4.591E+00	0.5374	4.184E-03	0.0005	1.219E-02	0.0014	1.424E-02	0.0017
Total	2.501E+00	0.2928	1.774E-04	0.0000	0.000E+00	0.0000	5.924E+00	0.6935	1.068E-02	0.0012	2.071E-02	0.0024	8.542E-02	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.421E+00	0.1664
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.121E+00	0.8336
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.542E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.326E-03	0.0002	1.235E-04	0.0000	0.000E+00	0.0000	1.292E+00	0.1513	6.292E-03	0.0007	8.255E-03	0.0010	6.899E-02	0.0081
Ra-226	2.498E+00	0.2927	5.383E-05	0.0000	0.000E+00	0.0000	4.628E+00	0.5422	4.385E-03	0.0005	1.245E-02	0.0015	1.641E-02	0.0019
Total	2.500E+00	0.2928	1.774E-04	0.0000	0.000E+00	0.0000	5.920E+00	0.6935	1.068E-02	0.0013	2.070E-02	0.0024	8.540E-02	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.377E+00	0.1613
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.160E+00	0.8387
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.537E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.245E-03	0.0001	1.160E-04	0.0000	0.000E+00	0.0000	1.212E+00	0.1422	5.910E-03	0.0007	7.753E-03	0.0009	6.481E-02	0.0076
Ra-226	2.496E+00	0.2929	6.122E-05	0.0000	0.000E+00	0.0000	4.696E+00	0.5510	4.756E-03	0.0006	1.292E-02	0.0015	2.055E-02	0.0024
Total	2.498E+00	0.2931	1.773E-04	0.0000	0.000E+00	0.0000	5.907E+00	0.6932	1.067E-02	0.0013	2.068E-02	0.0024	8.535E-02	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.291E+00	0.1515
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.230E+00	0.8485
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.522E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.000E-03	0.0001	9.320E-05	0.0000	0.000E+00	0.0000	9.686E-01	0.1144	4.745E-03	0.0006	6.225E-03	0.0007	5.205E-02	0.0061
Ra-226	2.489E+00	0.2939	8.366E-05	0.0000	0.000E+00	0.0000	4.894E+00	0.5779	5.880E-03	0.0007	1.436E-02	0.0017	3.313E-02	0.0039
Total	2.490E+00	0.2940	1.769E-04	0.0000	0.000E+00	0.0000	5.863E+00	0.6923	1.062E-02	0.0013	2.059E-02	0.0024	8.518E-02	0.0101

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E+00	0.1219
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.437E+00	0.8781
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.469E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.348E-04	0.0001	4.983E-05	0.0000	0.000E+00	0.0000	5.109E-01	0.0614	2.534E-03	0.0003	3.325E-03	0.0004	2.783E-02	0.0033
Ra-226	2.467E+00	0.2966	1.258E-04	0.0000	0.000E+00	0.0000	5.225E+00	0.6281	7.968E-03	0.0010	1.700E-02	0.0020	5.676E-02	0.0068
Total	2.468E+00	0.2966	1.756E-04	0.0000	0.000E+00	0.0000	5.736E+00	0.6895	1.050E-02	0.0013	2.032E-02	0.0024	8.459E-02	0.0102

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.452E-01	0.0655
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.774E+00	0.9345
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.319E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.977E-05	0.0000	5.569E-06	0.0000	0.000E+00	0.0000	5.438E-02	0.0070	2.819E-04	0.0000	3.703E-04	0.0000	3.110E-03	0.0004
Ra-226	2.392E+00	0.3066	1.649E-04	0.0000	0.000E+00	0.0000	5.243E+00	0.6721	9.762E-03	0.0013	1.900E-02	0.0024	7.905E-02	0.0101
Total	2.392E+00	0.3066	1.705E-04	0.0000	0.000E+00	0.0000	5.298E+00	0.6791	1.004E-02	0.0013	1.937E-02	0.0025	8.216E-02	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.821E-02	0.0075
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.743E+00	0.9925
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.801E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.141E-07	0.0000	1.063E-08	0.0000	0.000E+00	0.0000	8.898E-05	0.0000	5.312E-07	0.0000	6.999E-07	0.0000	5.938E-06	0.0000
Ra-226	2.187E+00	0.3396	1.560E-04	0.0000	0.000E+00	0.0000	4.153E+00	0.6447	8.793E-03	0.0014	1.680E-02	0.0026	7.515E-02	0.0117
Total	2.187E+00	0.3396	1.560E-04	0.0000	0.000E+00	0.0000	4.153E+00	0.6448	8.794E-03	0.0014	1.680E-02	0.0026	7.516E-02	0.0117

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.627E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.441E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.441E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.516E-17	0.0000	3.232E-18	0.0000	0.000E+00	0.0000	1.126E-14	0.0000	1.541E-16	0.0000	2.053E-16	0.0000	1.805E-15	0.0000
Ra-226	1.606E+00	0.5459	1.141E-04	0.0000	0.000E+00	0.0000	1.265E+00	0.4301	5.425E-03	0.0018	9.938E-03	0.0034	5.498E-02	0.0187
Total	1.606E+00	0.5459	1.141E-04	0.0000	0.000E+00	0.0000	1.265E+00	0.4301	5.425E-03	0.0018	9.938E-03	0.0034	5.498E-02	0.0187

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.347E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.941E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.941E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.421E+00	1.377E+00	1.291E+00	1.033E+00	5.452E-01	5.821E-02	9.627E-05	1.347E-14
Ra-226+D	Ra-226+D	1.000E+00	7.076E+00	7.070E+00	7.058E+00	7.015E+00	6.892E+00	6.477E+00	5.391E+00	2.588E+00
Ra-226+D	Pb-210+D	1.000E+00	4.438E-02	8.980E-02	1.724E-01	4.219E-01	8.817E-01	1.266E+00	1.049E+00	3.527E-01
Ra-226+D	ΣDSR(j)		7.121E+00	7.160E+00	7.230E+00	7.437E+00	7.774E+00	7.743E+00	6.441E+00	2.941E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.759E+01	1.816E+01	1.936E+01	2.421E+01	4.586E+01	4.295E+02	2.597E+05	*7.634E+13	
Ra-226	3.511E+00	3.492E+00	3.458E+00	3.362E+00	3.216E+00	3.229E+00	3.882E+00	8.501E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.421E+00	1.759E+01	1.421E+00	1.759E+01
Ra-226	1.000E+00	56.6 ± 0.1	7.887E+00	3.170E+00	7.121E+00	3.511E+00

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.421E+00	1.377E+00	1.291E+00	1.033E+00	5.452E-01	5.821E-02	9.627E-05	1.347E-14
Pb-210	Ra-226	1.000E+00	4.438E-02	8.980E-02	1.724E-01	4.219E-01	8.817E-01	1.266E+00	1.049E+00	3.527E-01
Pb-210	ΣDOSE(j)		1.466E+00	1.466E+00	1.464E+00	1.455E+00	1.427E+00	1.324E+00	1.049E+00	3.527E-01
Ra-226	Ra-226	1.000E+00	7.076E+00	7.070E+00	7.058E+00	7.015E+00	6.892E+00	6.477E+00	5.391E+00	2.588E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.692E-01	9.104E-01	7.312E-01	3.910E-01	4.369E-02	8.341E-05	2.536E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.059E-02	8.894E-02	2.663E-01	6.001E-01	9.192E-01	8.808E-01	6.444E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.993E-01	9.975E-01	9.910E-01	9.629E-01	8.809E-01	6.444E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.955E-01	9.867E-01	9.563E-01	8.746E-01	6.397E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.34 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
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Summary : Hematite - Excavation Scenario - Th-232+C

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Excavation Scenario - Th-232+C

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Attachment 4 to HEM-11-91

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	7.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.350E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.350E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.350E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	700.00 square meters	Ra-228	1.000E+00
Thickness:	0.90 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	8.839E+00	8.837E+00	8.830E+00	8.805E+00	8.736E+00	8.494E+00	7.804E+00	5.376E+00
M(t):	3.536E-01	3.535E-01	3.532E-01	3.522E-01	3.494E-01	3.398E-01	3.121E-01	2.151E-01

Maximum TDOSE(t): 8.839E+00 mrem/yr at t = 0.000E+00 years

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.611E+00	0.1822	3.248E-04	0.0000	0.000E+00	0.0000	4.712E+00	0.5331	4.194E-03	0.0005	1.237E-02	0.0014	1.474E-02	0.0017
Th-228	1.916E+00	0.2168	1.617E-03	0.0002	0.000E+00	0.0000	3.135E-02	0.0035	7.057E-05	0.0000	1.244E-05	0.0000	6.740E-03	0.0008
Th-232	9.219E-02	0.0104	9.168E-03	0.0010	0.000E+00	0.0000	3.981E-01	0.0450	4.769E-04	0.0001	7.023E-04	0.0001	2.801E-02	0.0032
Total	3.619E+00	0.4094	1.111E-02	0.0013	0.000E+00	0.0000	5.142E+00	0.5817	4.742E-03	0.0005	1.309E-02	0.0015	4.949E-02	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.354E+00	0.7189
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.956E+00	0.2213
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.286E-01	0.0598
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.839E+00	1.0000

*Sum of all water independent and dependent pathways.

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.974E+00	0.2234	7.492E-04	0.0001	0.000E+00	0.0000	4.186E+00	0.4737	3.740E-03	0.0004	1.097E-02	0.0012	1.499E-02	0.0017
Th-228	1.334E+00	0.1509	1.126E-03	0.0001	0.000E+00	0.0000	2.180E-02	0.0025	4.912E-05	0.0000	8.658E-06	0.0000	4.692E-03	0.0005
Th-232	3.108E-01	0.0352	9.235E-03	0.0010	0.000E+00	0.0000	9.319E-01	0.1055	9.488E-04	0.0001	2.097E-03	0.0002	2.981E-02	0.0034
Total	3.619E+00	0.4096	1.111E-02	0.0013	0.000E+00	0.0000	5.139E+00	0.5816	4.738E-03	0.0005	1.307E-02	0.0015	4.949E-02	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.190E+00	0.7005
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.362E+00	0.1541
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.285E+00	0.1454
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.837E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.154E+00	0.2439	1.097E-03	0.0001	0.000E+00	0.0000	3.294E+00	0.3731	2.959E-03	0.0003	8.614E-03	0.0010	1.390E-02	0.0016
Th-228	6.463E-01	0.0732	5.453E-04	0.0001	0.000E+00	0.0000	1.055E-02	0.0012	2.380E-05	0.0000	4.195E-06	0.0000	2.273E-03	0.0003
Th-232	8.192E-01	0.0928	9.467E-03	0.0011	0.000E+00	0.0000	1.828E+00	0.2070	1.752E-03	0.0002	4.444E-03	0.0005	3.332E-02	0.0038
Total	3.619E+00	0.4099	1.111E-02	0.0013	0.000E+00	0.0000	5.132E+00	0.5813	4.734E-03	0.0005	1.306E-02	0.0015	4.949E-02	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.474E+00	0.6200
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.597E-01	0.0747
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.696E+00	0.3053
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.830E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.266E+00	0.1438	7.584E-04	0.0001	0.000E+00	0.0000	1.415E+00	0.1608	1.281E-03	0.0001	3.696E-03	0.0004	7.172E-03	0.0008
Th-228	5.116E-02	0.0058	4.317E-05	0.0000	0.000E+00	0.0000	8.313E-04	0.0001	1.884E-06	0.0000	3.320E-07	0.0000	1.799E-04	0.0000
Th-232	2.302E+00	0.2614	1.031E-02	0.0012	0.000E+00	0.0000	3.692E+00	0.4193	3.438E-03	0.0004	9.329E-03	0.0011	4.214E-02	0.0048
Total	3.619E+00	0.4110	1.111E-02	0.0013	0.000E+00	0.0000	5.108E+00	0.5801	4.721E-03	0.0005	1.303E-02	0.0015	4.949E-02	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.694E+00	0.3060
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.222E-02	0.0059
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.059E+00	0.6881
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.805E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.204E-01	0.0138	7.379E-05	0.0000	0.000E+00	0.0000	1.254E-01	0.0144	1.142E-04	0.0000	3.290E-04	0.0000	6.673E-04	0.0001
Th-228	3.647E-05	0.0000	3.077E-08	0.0000	0.000E+00	0.0000	5.846E-07	0.0000	1.342E-09	0.0000	2.366E-10	0.0000	1.283E-07	0.0000
Th-232	3.498E+00	0.4004	1.103E-02	0.0013	0.000E+00	0.0000	4.914E+00	0.5625	4.567E-03	0.0005	1.259E-02	0.0014	4.882E-02	0.0056
Total	3.619E+00	0.4142	1.111E-02	0.0013	0.000E+00	0.0000	5.039E+00	0.5768	4.682E-03	0.0005	1.292E-02	0.0015	4.949E-02	0.0057

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.469E-01	0.0283
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.721E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.489E+00	0.9717
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.736E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.604E-05	0.0000	1.596E-08	0.0000	0.000E+00	0.0000	2.582E-05	0.0000	2.393E-08	0.0000	6.912E-08	0.0000	1.443E-07	0.0000
Th-228	3.525E-16	0.0000	2.975E-19	0.0000	0.000E+00	0.0000	5.382E-18	0.0000	1.296E-20	0.0000	2.285E-21	0.0000	1.240E-18	0.0000
Th-232	3.618E+00	0.4259	1.111E-02	0.0013	0.000E+00	0.0000	4.798E+00	0.5649	4.546E-03	0.0005	1.256E-02	0.0015	4.948E-02	0.0058
Total	3.618E+00	0.4259	1.111E-02	0.0013	0.000E+00	0.0000	4.798E+00	0.5649	4.546E-03	0.0005	1.256E-02	0.0015	4.948E-02	0.0058

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.211E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.595E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.494E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.494E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.785E-16	0.0000	5.387E-19	0.0000	0.000E+00	0.0000	7.467E-16	0.0000	7.346E-19	0.0000	2.140E-18	0.0000	4.870E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.616E+00	0.4634	1.110E-02	0.0014	0.000E+00	0.0000	4.111E+00	0.5268	4.158E-03	0.0005	1.153E-02	0.0015	4.947E-02	0.0063
Total	3.616E+00	0.4634	1.110E-02	0.0014	0.000E+00	0.0000	4.111E+00	0.5268	4.158E-03	0.0005	1.153E-02	0.0015	4.947E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.634E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.804E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.804E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.595E+00	0.6687	1.109E-02	0.0021	0.000E+00	0.0000	1.710E+00	0.3180	2.802E-03	0.0005	7.914E-03	0.0015	4.940E-02	0.0092
Total	3.595E+00	0.6687	1.109E-02	0.0021	0.000E+00	0.0000	1.710E+00	0.3180	2.802E-03	0.0005	7.914E-03	0.0015	4.940E-02	0.0092

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.376E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.376E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	5.966E+00	5.286E+00	4.149E+00	1.777E+00	1.578E-01	3.284E-05	9.856E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.885E-01	9.048E-01	1.326E+00	9.168E-01	8.918E-02	1.927E-05	6.479E-16	0.000E+00
Ra-228+D	ΣDSR(j)		6.354E+00	6.190E+00	5.474E+00	2.694E+00	2.469E-01	5.211E-05	1.634E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.956E+00	1.362E+00	6.597E-01	5.222E-02	3.721E-05	3.595E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.629E-01	1.628E-01	1.626E-01	1.621E-01	1.604E-01	1.545E-01	1.376E-01	7.862E-02
Th-232	Ra-228+D	1.000E+00	3.489E-01	1.024E+00	2.154E+00	4.502E+00	6.055E+00	5.981E+00	5.318E+00	3.014E+00
Th-232	Th-228+D	1.000E+00	1.682E-02	9.770E-02	3.787E-01	1.395E+00	2.273E+00	2.359E+00	2.348E+00	2.284E+00
Th-232	ΣDSR(j)		5.286E-01	1.285E+00	2.696E+00	6.059E+00	8.489E+00	8.494E+00	7.804E+00	5.376E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	3.934E+00	4.039E+00	4.567E+00	9.279E+00	1.012E+02	4.798E+05	*2.726E+14	*2.726E+14	
Th-228	1.278E+01	1.836E+01	3.790E+01	4.788E+02	6.718E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	4.729E+01	1.946E+01	9.274E+00	4.126E+00	2.945E+00	2.943E+00	3.204E+00	4.650E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	6.354E+00	3.934E+00	6.354E+00	3.934E+00
Th-228	1.000E+00	0.000E+00	1.956E+00	1.278E+01	1.956E+00	1.278E+01
Th-232	1.000E+00	47.84 ± 0.10	8.646E+00	2.892E+00	5.286E-01	4.729E+01

Summary : Hematite - Excavation Scenario - Th-232+C

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	5.966E+00	5.286E+00	4.149E+00	1.777E+00	1.578E-01	3.284E-05	9.856E-16	0.000E+00
Ra-228	Th-232	1.000E+00	3.489E-01	1.024E+00	2.154E+00	4.502E+00	6.055E+00	5.981E+00	5.318E+00	3.014E+00
Ra-228	ΣDOSE(j)		6.315E+00	6.310E+00	6.303E+00	6.280E+00	6.213E+00	5.981E+00	5.318E+00	3.014E+00
Th-228	Ra-228	1.000E+00	3.885E-01	9.048E-01	1.326E+00	9.168E-01	8.918E-02	1.927E-05	6.479E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.956E+00	1.362E+00	6.597E-01	5.222E-02	3.721E-05	3.595E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.682E-02	9.770E-02	3.787E-01	1.395E+00	2.273E+00	2.359E+00	2.348E+00	2.284E+00
Th-228	ΣDOSE(j)		2.361E+00	2.364E+00	2.364E+00	2.364E+00	2.362E+00	2.359E+00	2.348E+00	2.284E+00
Th-232	Th-232	1.000E+00	1.629E-01	1.628E-01	1.626E-01	1.621E-01	1.604E-01	1.545E-01	1.376E-01	7.862E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.809E-06	1.960E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.997E-01	9.994E-01	9.981E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01	9.981E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.706E-06	2.938E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.997E-01	9.994E-01	9.981E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01	9.981E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.982E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.64 seconds

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Summary : Hematite - Deep CSM- AF 1 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Deep CSM- AF 1 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Deep CSM- AF 1 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep CSM- AF 1 m²

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TD_{DOSE}(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDose(t):	1.207E-12	1.218E-12	1.239E-12	1.319E-12	1.579E-12	3.046E-12	2.218E-11	3.028E-03
M(t):	4.828E-14	4.871E-14	4.958E-14	5.276E-14	6.318E-14	1.219E-13	8.872E-13	1.211E-04

Maximum TDOSE(t): 4.250E-03 mrem/yr at t = 595 ± 1 years

Total Dose Contributions $TDOSE(i,p,t)$ for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

Summary : Hematite - Deep CSM- AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.465E-07	0.0000	5.577E-09	0.0000	0.000E+00	0.0000	6.781E-12	0.0000	5.026E-14	0.0000	4.222E-15	0.0000	1.521E-07	0.0000
Np-237	4.093E-03	0.9632	1.558E-04	0.0367	0.000E+00	0.0000	1.895E-07	0.0000	1.405E-09	0.0000	1.180E-10	0.0000	4.249E-03	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.156E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.270E-19	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.572E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.757E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.852E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.240E-10	0.0000
Total	4.094E-03	0.9633	1.558E-04	0.0367	0.000E+00	0.0000	1.895E-07	0.0000	1.405E-09	0.0000	1.180E-10	0.0000	4.250E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.647E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.016E-14	0.0084	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.421E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.328E-29	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.582E-29	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.074E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	4.580E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	1.197E-12	0.9915	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.207E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.647E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.016E-14	0.0084
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.421E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.328E-29	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.582E-29	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.074E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.580E-17	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.197E-12	0.9915
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.207E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.989E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.027E-14	0.0084	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.468E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	7.480E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.766E-29	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.461E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	4.695E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	1.207E-12	0.9915	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.218E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.989E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.027E-14	0.0084
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.468E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.480E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.766E-29	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.461E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.695E-17	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.207E-12	0.9915
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.218E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.189E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.050E-14	0.0085	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.564E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.567E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	9.146E-29	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	7.832E-17	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	5.067E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	1.229E-12	0.9914	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.239E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.189E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.050E-14	0.0085
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.564E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.567E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.146E-29	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.832E-17	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.067E-17	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.229E-12	0.9914
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.239E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.845E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.135E-14	0.0086	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.921E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	7.408E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.061E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	7.375E-16	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	7.829E-17	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	1.307E-12	0.9908	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.319E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.845E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.135E-14	0.0086
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.921E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.408E-25	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.061E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.375E-16	0.0006
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.829E-17	0.0001
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.307E-12	0.9908
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.319E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.385E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.419E-14	0.0090	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	5.151E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.001E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.621E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	7.204E-15	0.0046	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.842E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	1.558E-12	0.9863	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.579E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.385E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.419E-14	0.0090
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.001E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.621E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.204E-15	0.0046
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.842E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.558E-12	0.9863
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.694E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.104E-14	0.0102	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.340E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	5.572E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	7.144E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.309E-13	0.0430	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.882E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	2.881E-12	0.9459	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.046E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.694E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.104E-14	0.0102
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.340E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.572E-22	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.144E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.309E-13	0.0430
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.882E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.881E-12	0.9459
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.046E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.504E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.921E-13	0.0132	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	2.060E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.026E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	4.951E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.098E-12	0.2298	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	7.470E-14	0.0034	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	1.672E-11	0.7536	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.218E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.504E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.921E-13	0.0132
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.060E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.026E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.951E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.098E-12	0.2298
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.470E-14	0.0034
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.672E-11	0.7536
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.218E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.572E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.538E-08	0.0000	3.954E-13	0.0000	4.155E-14	0.0000	0.000E+00	0.0000
Np-237	7.045E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.977E-07	0.0003	3.353E-10	0.0000	1.033E-11	0.0000	0.000E+00	0.0000
Pu-239	2.897E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.041E-08	0.0000	2.960E-12	0.0000	8.994E-14	0.0000	0.000E+00	0.0000
Pu-240	1.953E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.518E-08	0.0000	2.740E-12	0.0000	8.363E-14	0.0000	0.000E+00	0.0000
Tc-99	1.372E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-07	0.0001	9.578E-12	0.0000	2.969E-10	0.0000	0.000E+00	0.0000
U-234	9.792E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-08	0.0000	1.046E-11	0.0000	1.688E-11	0.0000	0.000E+00	0.0000
U-235	2.998E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.049E-08	0.0000	8.490E-12	0.0000	1.211E-11	0.0000	0.000E+00	0.0000
U-238	7.925E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-08	0.0000	8.428E-12	0.0000	1.194E-11	0.0000	0.000E+00	0.0000
Total	1.872E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.275E-06	0.0004	3.784E-10	0.0000	3.484E-10	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.059E-07	0.0001	1.545E-08	0.0000	0.000E+00	0.0000	1.878E-11	0.0000	1.393E-13	0.0000	1.173E-14	0.0000	4.367E-07	0.0001
Np-237	2.913E-03	0.9623	1.109E-04	0.0366	0.000E+00	0.0000	1.348E-07	0.0000	1.000E-09	0.0000	8.448E-11	0.0000	3.025E-03	0.9992
Pu-239	5.602E-16	0.0000	5.642E-18	0.0000	0.000E+00	0.0000	2.560E-20	0.0000	2.324E-22	0.0000	9.574E-22	0.0000	7.042E-08	0.0000
Pu-240	1.693E-14	0.0000	1.703E-16	0.0000	0.000E+00	0.0000	7.738E-19	0.0000	7.028E-21	0.0000	2.895E-20	0.0000	6.518E-08	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.305E-07	0.0001
U-234	4.785E-07	0.0002	4.846E-09	0.0000	0.000E+00	0.0000	2.194E-11	0.0000	2.057E-13	0.0000	8.222E-13	0.0000	5.134E-07	0.0002
U-235	4.533E-07	0.0001	4.592E-09	0.0000	0.000E+00	0.0000	2.079E-11	0.0000	1.949E-13	0.0000	7.789E-13	0.0000	5.187E-07	0.0002
U-238	4.570E-07	0.0002	4.628E-09	0.0000	0.000E+00	0.0000	2.096E-11	0.0000	1.964E-13	0.0000	7.852E-13	0.0000	4.850E-07	0.0002
Total	2.915E-03	0.9629	1.109E-04	0.0366	0.000E+00	0.0000	1.349E-07	0.0000	1.001E-09	0.0000	8.688E-11	0.0000	3.028E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	1.520E-08
Am-241	Np-237+D	1.000E+00	1.647E-21	4.989E-21	1.189E-20	3.845E-20	1.385E-19	9.678E-19	2.485E-17	4.215E-07
Am-241	U-233	1.000E+00	1.709E-32	1.210E-31	6.560E-31	6.433E-30	7.059E-29	1.928E-27	2.412E-25	2.562E-11
Am-241	Th-229+D	1.000E+00	1.901E-28	2.869E-27	3.394E-26	9.474E-25	2.684E-23	1.607E-21	1.883E-19	1.300E-14
Am-241	ΣDSR (j)		1.647E-21	4.989E-21	1.189E-20	3.845E-20	1.385E-19	9.694E-19	2.504E-17	4.367E-07
Np-237+D	Np-237+D	1.000E+00	1.016E-14	1.027E-14	1.050E-14	1.135E-14	1.418E-14	3.089E-14	2.857E-13	3.025E-03
Np-237+D	U-233	1.000E+00	1.581E-25	4.801E-25	1.151E-24	3.793E-24	1.444E-23	1.226E-22	5.486E-21	3.562E-07
Np-237+D	Th-229+D	1.000E+00	2.347E-21	1.653E-20	8.871E-20	8.370E-19	8.224E-18	1.526E-16	6.336E-15	2.429E-10
Np-237+D	ΣDSR (j)		1.016E-14	1.027E-14	1.050E-14	1.135E-14	1.419E-14	3.104E-14	2.921E-13	3.025E-03
Pu-239	Pu-239	1.000E+00	3.421E-20	3.468E-20	3.564E-20	3.921E-20	5.151E-20	1.338E-19	2.049E-18	7.042E-08
Pu-239	U-235+D	1.000E+00	2.255E-26	6.849E-26	1.642E-25	5.427E-25	2.079E-24	1.804E-23	8.601E-22	1.778E-14
Pu-239	Pa-231	1.000E+00	1.104E-29	7.803E-29	4.219E-28	4.093E-27	4.355E-26	1.068E-24	9.785E-23	2.036E-14
Pu-239	Ac-227+D	1.000E+00	1.881E-29	2.827E-28	3.309E-27	8.901E-26	2.289E-24	1.068E-22	9.670E-21	2.826E-15
Pu-239	ΣDSR (j)		3.421E-20	3.468E-20	3.564E-20	3.921E-20	5.151E-20	1.340E-19	2.060E-18	7.042E-08
Pu-240	Pu-240	4.950E-08	3.190E-37	3.261E-37	3.407E-37	3.974E-37	6.168E-37	2.873E-36	2.332E-34	3.226E-15
Pu-240	Pu-240	1.000E+00	6.444E-30	6.587E-30	6.883E-30	8.028E-30	1.246E-29	5.805E-29	4.711E-27	6.518E-08
Pu-240	U-236	1.000E+00	4.433E-35	1.354E-34	3.285E-34	1.132E-33	4.892E-33	6.476E-32	1.029E-29	5.159E-13
Pu-240	Th-232	1.000E+00	0.000E+00	1.401E-45	8.408E-45	7.847E-44	1.006E-42	4.732E-41	2.794E-38	3.596E-20
Pu-240	Ra-228+D	1.000E+00	2.115E-30	3.116E-29	3.496E-28	8.164E-27	1.541E-25	4.224E-24	2.206E-22	2.230E-18
Pu-240	Th-228+D	1.000E+00	2.472E-29	7.102E-28	1.531E-26	7.326E-25	1.986E-23	5.530E-22	2.004E-20	1.869E-17
Pu-240	ΣDSR (j)		3.328E-29	7.480E-28	1.567E-26	7.408E-25	2.001E-23	5.572E-22	2.026E-20	6.518E-08
Tc-99	Tc-99	1.000E+00	8.582E-29	8.766E-29	9.146E-29	1.061E-28	1.621E-28	7.144E-28	4.951E-26	2.305E-07
U-234	U-234	1.000E+00	1.876E-26	1.913E-26	1.988E-26	2.277E-26	3.354E-26	1.302E-25	6.266E-24	4.995E-07
U-234	Th-230	1.000E+00	1.425E-30	4.348E-30	1.053E-29	3.602E-29	1.524E-28	1.873E-27	2.409E-25	8.782E-11
U-234	Ra-226+D	1.000E+00	2.074E-18	1.461E-17	7.832E-17	7.375E-16	7.204E-15	1.309E-13	5.098E-12	1.291E-08
U-234	Pb-210+D	1.000E+00	2.407E-27	3.615E-26	4.227E-25	1.132E-23	2.874E-22	1.277E-20	9.867E-19	8.918E-10
U-234	ΣDSR (j)		2.074E-18	1.461E-17	7.832E-17	7.375E-16	7.204E-15	1.309E-13	5.098E-12	5.134E-07
U-235+D	U-235+D	1.000E+00	4.569E-17	4.632E-17	4.761E-17	5.240E-17	6.893E-17	1.800E-16	2.798E-15	4.733E-07
U-235+D	Pa-231	1.000E+00	3.359E-20	1.018E-19	2.430E-19	7.906E-19	2.896E-18	2.149E-17	6.535E-16	3.978E-08
U-235+D	Ac-227+D	1.000E+00	7.626E-20	5.334E-19	2.815E-18	2.509E-17	2.124E-16	2.680E-15	7.125E-14	5.699E-09
U-235+D	ΣDSR (j)		4.580E-17	4.695E-17	5.067E-17	7.829E-17	2.842E-16	2.882E-15	7.470E-14	5.187E-07
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.437E-11
U-238+D	U-238+D	9.999E-01	1.197E-12	1.207E-12	1.229E-12	1.307E-12	1.558E-12	2.881E-12	1.671E-11	4.835E-07
U-238+D	U-234	9.999E-01	2.668E-32	8.142E-32	1.974E-31	6.778E-31	2.900E-30	3.709E-29	5.340E-27	1.419E-09
U-238+D	Th-230	9.999E-01	1.349E-36	9.596E-36	5.260E-35	5.363E-34	6.579E-33	2.655E-31	1.012E-28	1.187E-13
U-238+D	Ra-226+D	9.999E-01	1.470E-24	2.219E-23	2.626E-22	7.328E-21	2.076E-19	1.242E-17	1.442E-15	1.204E-11
U-238+D	Pb-210+D	9.999E-01	1.370E-33	4.247E-32	1.076E-30	8.577E-29	6.482E-27	1.016E-24	2.554E-22	8.362E-13
U-238+D	ΣDSR (j)		1.197E-12	1.207E-12	1.229E-12	1.307E-12	1.558E-12	2.881E-12	1.672E-11	4.850E-07

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	5.725E+07
Np-237		*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	8.264E+03
Pu-239		*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	3.550E+08
Pu-240		*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	3.836E+08
Tc-99		*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	1.085E+08
U-234		*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	4.870E+07
U-235		*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06
U-238		*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	1.000E+03	4.367E-07	5.725E+07	1.521E-07	1.644E+08
Np-237	1.000E+00	595 ± 1	4.249E-03	5.883E+03	4.249E-03	5.883E+03
Pu-239	1.000E+00	1.000E+03	7.042E-08	3.550E+08	1.156E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	6.518E-08	3.836E+08	5.270E-19	*2.278E+11
Tc-99	1.000E+00	1.000E+03	2.305E-07	1.085E+08	2.572E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	5.134E-07	4.870E+07	1.757E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	5.187E-07	*2.161E+06	2.852E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	4.850E-07	*3.361E+05	2.240E-10	*3.361E+05

*At specific activity limit

Summary : Hematite - Deep CSM- AF 1 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.520E-08
Np-237	Am-241	1.000E+00	1.647E-21	4.989E-21	1.189E-20	3.845E-20	1.385E-19	9.678E-19	2.485E-17	4.215E-07
Np-237	Np-237	1.000E+00	1.016E-14	1.027E-14	1.050E-14	1.135E-14	1.418E-14	3.089E-14	2.857E-13	3.025E-03
Np-237	ΣDOSE (j)		1.016E-14	1.027E-14	1.050E-14	1.135E-14	1.418E-14	3.089E-14	2.858E-13	3.025E-03
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	6.433E-30	7.059E-29	1.928E-27	2.412E-25	2.562E-11
U-233	Np-237	1.000E+00	1.581E-25	4.801E-25	1.151E-24	3.793E-24	1.444E-23	1.226E-22	5.486E-21	3.562E-07
U-233	ΣDOSE (j)		1.581E-25	4.801E-25	1.151E-24	3.793E-24	1.444E-23	1.226E-22	5.486E-21	3.562E-07
Th-229	Am-241	1.000E+00	1.901E-28	2.869E-27	3.394E-26	9.474E-25	2.684E-23	1.607E-21	1.883E-19	1.300E-14
Th-229	Np-237	1.000E+00	2.347E-21	1.653E-20	8.871E-20	8.370E-19	8.224E-18	1.526E-16	6.336E-15	2.429E-10
Th-229	ΣDOSE (j)		2.347E-21	1.653E-20	8.871E-20	8.370E-19	8.224E-18	1.526E-16	6.336E-15	2.429E-10
Pu-239	Pu-239	1.000E+00	3.421E-20	3.468E-20	3.564E-20	3.921E-20	5.151E-20	1.338E-19	2.049E-18	7.042E-08
U-235	Pu-239	1.000E+00	2.255E-26	6.849E-26	1.642E-25	5.427E-25	2.079E-24	1.804E-23	8.601E-22	1.778E-14
U-235	U-235	1.000E+00	4.569E-17	4.632E-17	4.761E-17	5.240E-17	6.893E-17	1.800E-16	2.798E-15	4.733E-07
U-235	ΣDOSE (j)		4.569E-17	4.632E-17	4.761E-17	5.240E-17	6.893E-17	1.800E-16	2.798E-15	4.733E-07
Pa-231	Pu-239	1.000E+00	1.104E-29	7.803E-29	4.219E-28	4.093E-27	4.355E-26	1.068E-24	9.785E-23	2.036E-14
Pa-231	U-235	1.000E+00	3.359E-20	1.018E-19	2.430E-19	7.906E-19	2.896E-18	2.149E-17	6.535E-16	3.978E-08
Pa-231	ΣDOSE (j)		3.359E-20	1.018E-19	2.430E-19	7.906E-19	2.896E-18	2.149E-17	6.535E-16	3.978E-08
Ac-227	Pu-239	1.000E+00	1.881E-29	2.827E-28	3.309E-27	8.901E-26	2.289E-24	1.068E-22	9.670E-21	2.826E-15
Ac-227	U-235	1.000E+00	7.626E-20	5.334E-19	2.815E-18	2.509E-17	2.124E-16	2.680E-15	7.125E-14	5.699E-09
Ac-227	ΣDOSE (j)		7.626E-20	5.334E-19	2.815E-18	2.509E-17	2.124E-16	2.680E-15	7.125E-14	5.699E-09
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.226E-15
Pu-240	Pu-240	1.000E+00	6.444E-30	6.587E-30	6.883E-30	8.028E-30	1.246E-29	5.805E-29	4.711E-27	6.518E-08
Pu-240	ΣDOSE (j)		6.444E-30	6.587E-30	6.883E-30	8.028E-30	1.246E-29	5.805E-29	4.711E-27	6.518E-08
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.029E-29	5.159E-13
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.596E-20
Ra-228	Pu-240	1.000E+00	2.115E-30	3.116E-29	3.496E-28	8.164E-27	1.541E-25	4.224E-24	2.206E-22	2.230E-18
Th-228	Pu-240	1.000E+00	2.472E-29	7.102E-28	1.531E-26	7.326E-25	1.986E-23	5.530E-22	2.004E-20	1.869E-17
Tc-99	Tc-99	1.000E+00	8.582E-29	8.766E-29	9.146E-29	1.061E-28	1.621E-28	7.144E-28	4.951E-26	2.305E-07
U-234	U-234	1.000E+00	1.876E-26	1.913E-26	1.988E-26	2.277E-26	3.354E-26	1.302E-25	6.266E-24	4.995E-07
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.900E-30	3.709E-29	5.340E-27	1.419E-09
U-234	ΣDOSE (j)		1.876E-26	1.913E-26	1.988E-26	2.277E-26	3.355E-26	1.302E-25	6.272E-24	5.009E-07
Th-230	U-234	1.000E+00	1.425E-30	4.348E-30	1.053E-29	3.602E-29	1.524E-28	1.873E-27	2.409E-25	8.782E-11
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.012E-28	1.187E-13
Th-230	ΣDOSE (j)		1.425E-30	4.348E-30	1.053E-29	3.602E-29	1.524E-28	1.873E-27	2.410E-25	8.794E-11

Summary : Hematite - Deep CSM- AF 1 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	2.074E-18	1.461E-17	7.832E-17	7.375E-16	7.204E-15	1.309E-13	5.098E-12	1.291E-08
Ra-226	U-238	9.999E-01	1.470E-24	2.219E-23	2.626E-22	7.328E-21	2.076E-19	1.242E-17	1.442E-15	1.204E-11
Ra-226	ΣDOSE(j)		2.074E-18	1.461E-17	7.832E-17	7.375E-16	7.204E-15	1.309E-13	5.100E-12	1.292E-08
Pb-210	U-234	1.000E+00	2.407E-27	3.615E-26	4.227E-25	1.132E-23	2.874E-22	1.277E-20	9.867E-19	8.918E-10
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	1.076E-30	8.577E-29	6.482E-27	1.016E-24	2.554E-22	8.362E-13
Pb-210	ΣDOSE(j)		2.407E-27	3.615E-26	4.227E-25	1.132E-23	2.874E-22	1.277E-20	9.869E-19	8.926E-10
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.437E-11
U-238	U-238	9.999E-01	1.197E-12	1.207E-12	1.229E-12	1.307E-12	1.558E-12	2.881E-12	1.671E-11	4.835E-07
U-238	ΣDOSE(j)		1.197E-12	1.207E-12	1.229E-12	1.307E-12	1.558E-12	2.881E-12	1.671E-11	4.835E-07

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM- AF 1 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.58 seconds

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Summary : Hematite - Deep CSM- AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM- AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Deep CSM- AF 10 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Deep CSM- AF 10 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep CSM- AF 10 m²

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TD_{DOSE}(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDose(t):	3.680E-12	3.713E-12	3.779E-12	4.022E-12	4.819E-12	9.356E-12	7.034E-11	3.029E-02
M(t):	1.472E-13	1.485E-13	1.512E-13	1.609E-13	1.928E-13	3.742E-13	2.814E-12	1.211E-03

Maximum TDOSE(t): 4.251E-02 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

Summary : Hematite - Deep CSM- AF 10 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.465E-06	0.0000	5.577E-08	0.0000	0.000E+00	0.0000	6.781E-10	0.0000	5.026E-12	0.0000	4.222E-13	0.0000	1.522E-06	0.0000
Np-237	4.093E-02	0.9629	1.558E-03	0.0367	0.000E+00	0.0000	1.895E-05	0.0004	1.405E-07	0.0000	1.180E-08	0.0000	4.251E-02	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.779E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.031E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.441E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.325E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.223E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.841E-10	0.0000
Total	4.094E-02	0.9629	1.558E-03	0.0367	0.000E+00	0.0000	1.895E-05	0.0004	1.405E-07	0.0000	1.180E-08	0.0000	4.251E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.955E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.438E-14	0.0066	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.213E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.136E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.482E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	7.467E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.097E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.656E-12	0.9933	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.680E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.955E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.438E-14	0.0066
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.213E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.136E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.482E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.467E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.097E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.656E-12	0.9933
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.680E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.198E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.466E-14	0.0066	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.326E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.859E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.514E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.260E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.127E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.688E-12	0.9933	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.713E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.198E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.466E-14	0.0066
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.326E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.859E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.260E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.688E-12	0.9933
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.713E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.855E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.521E-14	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.556E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.035E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.579E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.820E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.229E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.754E-12	0.9932	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.779E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.855E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.521E-14	0.0067
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.556E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.035E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.820E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.229E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.754E-12	0.9932
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.779E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.232E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.725E-14	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	9.413E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.859E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.832E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.656E-15	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.022E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.992E-12	0.9925	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.022E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.232E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.725E-14	0.0068
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.413E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.859E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.656E-15	0.0007
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.022E-16	0.0001
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.992E-12	0.9925
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.022E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.325E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.407E-14	0.0071	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.237E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	7.730E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.799E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.594E-14	0.0054	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.057E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.758E-12	0.9874	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.819E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.325E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.407E-14	0.0071
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.237E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.730E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.594E-14	0.0054
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.057E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.758E-12	0.9874
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.819E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.329E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.470E-14	0.0080	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.217E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.152E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.234E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	4.713E-13	0.0504	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.466E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	8.802E-12	0.9407	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.356E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.329E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.470E-14	0.0080
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.152E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-27	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.713E-13	0.0504
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.466E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.802E-12	0.9407
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.356E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.033E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.085E-13	0.0101	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	4.951E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	7.822E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.550E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.836E-11	0.2610	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.192E-13	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.105E-11	0.7258	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.034E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.033E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.085E-13	0.0101
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.951E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.822E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.550E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.836E-11	0.2610
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.192E-13	0.0031
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.105E-11	0.7258
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.034E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.787E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.538E-07	0.0000	3.954E-12	0.0000	4.155E-13	0.0000	0.000E+00	0.0000
Np-237	1.708E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.977E-06	0.0003	3.353E-09	0.0000	1.033E-10	0.0000	0.000E+00	0.0000
Pu-239	6.955E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.041E-07	0.0000	2.960E-11	0.0000	8.994E-13	0.0000	0.000E+00	0.0000
Pu-240	7.489E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.518E-07	0.0000	2.740E-11	0.0000	8.363E-13	0.0000	0.000E+00	0.0000
Tc-99	2.369E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-06	0.0001	9.578E-11	0.0000	2.969E-09	0.0000	0.000E+00	0.0000
U-234	3.522E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-07	0.0000	1.046E-10	0.0000	1.688E-10	0.0000	0.000E+00	0.0000
U-235	8.226E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.049E-07	0.0000	8.490E-11	0.0000	1.211E-10	0.0000	0.000E+00	0.0000
U-238	2.419E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-07	0.0000	8.428E-11	0.0000	1.194E-10	0.0000	0.000E+00	0.0000
Total	6.195E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.275E-05	0.0004	3.784E-09	0.0000	3.484E-09	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.059E-06	0.0001	1.545E-07	0.0000	0.000E+00	0.0000	1.878E-09	0.0000	1.393E-11	0.0000	1.173E-12	0.0000	4.369E-06	0.0001
Np-237	2.913E-02	0.9619	1.109E-03	0.0366	0.000E+00	0.0000	1.348E-05	0.0004	1.000E-07	0.0000	8.448E-09	0.0000	3.026E-02	0.9992
Pu-239	5.602E-15	0.0000	5.642E-17	0.0000	0.000E+00	0.0000	2.560E-18	0.0000	2.324E-20	0.0000	9.574E-20	0.0000	7.042E-07	0.0000
Pu-240	1.693E-13	0.0000	1.703E-15	0.0000	0.000E+00	0.0000	7.738E-17	0.0000	7.028E-19	0.0000	2.895E-18	0.0000	6.518E-07	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.305E-06	0.0001
U-234	4.785E-06	0.0002	4.846E-08	0.0000	0.000E+00	0.0000	2.194E-09	0.0000	2.057E-11	0.0000	8.222E-11	0.0000	5.073E-06	0.0002
U-235	4.533E-06	0.0001	4.592E-08	0.0000	0.000E+00	0.0000	2.079E-09	0.0000	1.949E-11	0.0000	7.789E-11	0.0000	5.187E-06	0.0002
U-238	4.570E-06	0.0002	4.628E-08	0.0000	0.000E+00	0.0000	2.096E-09	0.0000	1.964E-11	0.0000	7.852E-11	0.0000	4.797E-06	0.0002
Total	2.915E-02	0.9625	1.109E-03	0.0366	0.000E+00	0.0000	1.349E-05	0.0004	1.001E-07	0.0000	8.688E-09	0.0000	3.029E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	1.520E-07
Am-241	Np-237+D	1.000E+00	3.955E-21	1.198E-20	2.855E-20	9.232E-20	3.324E-19	2.324E-18	5.966E-17	4.216E-06
Am-241	U-233	1.000E+00	3.714E-32	2.629E-31	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	2.563E-10
Am-241	Th-229+D	1.000E+00	6.798E-28	1.026E-26	1.214E-25	3.388E-24	9.597E-23	5.740E-21	6.698E-19	1.212E-13
Am-241	ΣDSR (j)		3.955E-21	1.198E-20	2.855E-20	9.232E-20	3.325E-19	2.329E-18	6.033E-17	4.369E-06
Np-237+D	Np-237+D	1.000E+00	2.438E-14	2.465E-14	2.521E-14	2.725E-14	3.404E-14	7.416E-14	6.860E-13	3.026E-02
Np-237+D	U-233	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	3.564E-06
Np-237+D	Th-229+D	1.000E+00	8.394E-21	5.914E-20	3.173E-19	2.994E-18	2.940E-17	5.450E-16	2.254E-14	2.321E-09
Np-237+D	ΣDSR (j)		2.438E-14	2.466E-14	2.521E-14	2.725E-14	3.407E-14	7.470E-14	7.085E-13	3.026E-02
Pu-239	Pu-239	1.000E+00	8.213E-20	8.326E-20	8.556E-20	9.413E-20	1.237E-19	3.214E-19	4.920E-18	7.042E-07
Pu-239	U-235+D	1.000E+00	5.399E-26	1.640E-25	3.931E-25	1.299E-24	4.974E-24	4.313E-23	2.046E-21	1.774E-13
Pu-239	Pa-231	1.000E+00	2.650E-29	1.873E-28	1.013E-27	9.826E-27	1.046E-25	2.563E-24	2.349E-22	2.036E-13
Pu-239	Ac-227+D	1.000E+00	5.619E-29	8.441E-28	9.883E-27	2.658E-25	6.830E-24	3.182E-22	2.863E-20	2.738E-14
Pu-239	ΣDSR (j)		8.213E-20	8.326E-20	8.556E-20	9.413E-20	1.237E-19	3.217E-19	4.951E-18	7.042E-07
Pu-240	Pu-240	4.950E-08	5.508E-37	5.631E-37	5.884E-37	6.863E-37	1.065E-36	4.962E-36	4.027E-34	3.226E-14
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-07
Pu-240	U-236	1.000E+00	7.656E-35	2.338E-34	5.672E-34	1.955E-33	8.448E-33	1.118E-31	1.778E-29	5.159E-12
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	1.401E-44	1.359E-43	1.738E-42	8.172E-41	4.825E-38	3.596E-19
Pu-240	Ra-228+D	1.000E+00	6.832E-30	1.007E-28	1.129E-27	2.637E-26	4.977E-25	1.364E-23	7.119E-22	1.660E-17
Pu-240	Th-228+D	1.000E+00	9.561E-29	2.747E-27	5.921E-26	2.833E-24	7.680E-23	2.139E-21	7.750E-20	7.235E-17
Pu-240	ΣDSR (j)		1.136E-28	2.859E-27	6.035E-26	2.859E-24	7.730E-23	2.152E-21	7.822E-20	6.518E-07
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.305E-06
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	4.997E-06
U-234	Th-230	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.782E-10
U-234	Ra-226+D	1.000E+00	7.467E-18	5.260E-17	2.820E-16	2.656E-15	2.594E-14	4.713E-13	1.836E-11	6.641E-08
U-234	Pb-210+D	1.000E+00	7.355E-27	1.104E-25	1.291E-24	3.459E-23	8.780E-22	3.902E-20	3.012E-18	8.918E-09
U-234	ΣDSR (j)		7.467E-18	5.260E-17	2.820E-16	2.656E-15	2.594E-14	4.713E-13	1.836E-11	5.073E-06
U-235+D	U-235+D	1.000E+00	1.094E-16	1.109E-16	1.140E-16	1.254E-16	1.649E-16	4.302E-16	6.656E-15	4.734E-06
U-235+D	Pa-231	1.000E+00	8.063E-20	2.444E-19	5.835E-19	1.898E-18	6.952E-18	5.159E-17	1.569E-15	3.977E-07
U-235+D	Ac-227+D	1.000E+00	2.277E-19	1.593E-18	8.407E-18	7.492E-17	6.338E-16	7.985E-15	2.110E-13	5.521E-08
U-235+D	ΣDSR (j)		1.097E-16	1.127E-16	1.229E-16	2.022E-16	8.057E-16	8.466E-15	2.192E-13	5.187E-06
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.438E-10
U-238+D	U-238+D	9.999E-01	3.656E-12	3.688E-12	3.754E-12	3.992E-12	4.758E-12	8.802E-12	5.105E-11	4.782E-06
U-238+D	U-234	9.999E-01	4.607E-32	1.406E-31	3.408E-31	1.171E-30	5.009E-30	6.405E-29	9.222E-27	1.419E-08
U-238+D	Th-230	9.999E-01	2.932E-36	2.086E-35	1.143E-34	1.166E-33	1.430E-32	5.771E-31	2.198E-28	1.187E-12
U-238+D	Ra-226+D	9.999E-01	5.294E-24	7.991E-23	9.455E-22	2.639E-20	7.475E-19	4.470E-17	5.192E-15	6.193E-11
U-238+D	Pb-210+D	9.999E-01	4.186E-33	1.297E-31	3.286E-30	2.620E-28	1.980E-26	3.104E-24	7.795E-22	8.362E-12
U-238+D	ΣDSR (j)		3.656E-12	3.688E-12	3.754E-12	3.992E-12	4.758E-12	8.802E-12	5.105E-11	4.796E-06

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Deep CSM- AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	5.722E+06
Np-237	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	8.261E+02
Pu-239	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	3.550E+07
Pu-240	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	3.836E+07
Tc-99	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	1.085E+07
U-234	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	4.928E+06
U-235	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	1.000E+03	4.369E-06	5.722E+06	1.522E-06	1.643E+07
Np-237	1.000E+00	595 ± 1	4.251E-02	5.881E+02	4.251E-02	5.881E+02
Pu-239	1.000E+00	1.000E+03	7.042E-07	3.550E+07	2.779E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	6.518E-07	3.836E+07	2.031E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	2.305E-06	1.085E+07	4.441E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	5.073E-06	4.928E+06	6.325E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	5.187E-06	*2.161E+06	8.223E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	4.797E-06	*3.361E+05	6.841E-10	*3.361E+05

*At specific activity limit

Summary : Hematite - Deep CSM- AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.520E-07
Np-237	Am-241	1.000E+00	3.955E-21	1.198E-20	2.855E-20	9.232E-20	3.324E-19	2.324E-18	5.966E-17	4.216E-06
Np-237	Np-237	1.000E+00	2.438E-14	2.465E-14	2.521E-14	2.725E-14	3.404E-14	7.416E-14	6.860E-13	3.026E-02
Np-237	ΣDOSE(j)		2.438E-14	2.466E-14	2.521E-14	2.725E-14	3.404E-14	7.416E-14	6.861E-13	3.026E-02
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	2.563E-10
U-233	Np-237	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	3.564E-06
U-233	ΣDOSE(j)		3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.139E-23	2.665E-22	1.192E-20	3.564E-06
Th-229	Am-241	1.000E+00	6.798E-28	1.026E-26	1.214E-25	3.388E-24	9.597E-23	5.740E-21	6.698E-19	1.212E-13
Th-229	Np-237	1.000E+00	8.394E-21	5.914E-20	3.173E-19	2.994E-18	2.940E-17	5.450E-16	2.254E-14	2.321E-09
Th-229	ΣDOSE(j)		8.394E-21	5.914E-20	3.173E-19	2.994E-18	2.940E-17	5.450E-16	2.254E-14	2.321E-09
Pu-239	Pu-239	1.000E+00	8.213E-20	8.326E-20	8.556E-20	9.413E-20	1.237E-19	3.214E-19	4.920E-18	7.042E-07
U-235	Pu-239	1.000E+00	5.399E-26	1.640E-25	3.931E-25	1.299E-24	4.974E-24	4.313E-23	2.046E-21	1.774E-13
U-235	U-235	1.000E+00	1.094E-16	1.109E-16	1.140E-16	1.254E-16	1.649E-16	4.302E-16	6.656E-15	4.734E-06
U-235	ΣDOSE(j)		1.094E-16	1.109E-16	1.140E-16	1.254E-16	1.649E-16	4.302E-16	6.656E-15	4.734E-06
Pa-231	Pu-239	1.000E+00	2.650E-29	1.873E-28	1.013E-27	9.826E-27	1.046E-25	2.563E-24	2.349E-22	2.036E-13
Pa-231	U-235	1.000E+00	8.063E-20	2.444E-19	5.835E-19	1.898E-18	6.952E-18	5.159E-17	1.569E-15	3.977E-07
Pa-231	ΣDOSE(j)		8.063E-20	2.444E-19	5.835E-19	1.898E-18	6.952E-18	5.159E-17	1.569E-15	3.977E-07
Ac-227	Pu-239	1.000E+00	5.619E-29	8.441E-28	9.883E-27	2.658E-25	6.830E-24	3.182E-22	2.863E-20	2.738E-14
Ac-227	U-235	1.000E+00	2.277E-19	1.593E-18	8.407E-18	7.492E-17	6.338E-16	7.985E-15	2.110E-13	5.521E-08
Ac-227	ΣDOSE(j)		2.277E-19	1.593E-18	8.407E-18	7.492E-17	6.338E-16	7.985E-15	2.110E-13	5.521E-08
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.226E-14
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-07
Pu-240	ΣDOSE(j)		1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-07
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-29	5.159E-12
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.596E-19
Ra-228	Pu-240	1.000E+00	6.832E-30	1.007E-28	1.129E-27	2.637E-26	4.977E-25	1.364E-23	7.119E-22	1.660E-17
Th-228	Pu-240	1.000E+00	9.561E-29	2.747E-27	5.921E-26	2.833E-24	7.680E-23	2.139E-21	7.750E-20	7.235E-17
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.305E-06
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	4.997E-06
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	1.171E-30	5.009E-30	6.405E-29	9.222E-27	1.419E-08
U-234	ΣDOSE(j)		3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.793E-26	2.248E-25	1.083E-23	5.011E-06
Th-230	U-234	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.782E-10
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-28	1.187E-12
Th-230	ΣDOSE(j)		3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.239E-25	8.794E-10

Summary : Hematite - Deep CSM- AF 10 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	7.467E-18	5.260E-17	2.820E-16	2.656E-15	2.594E-14	4.713E-13	1.836E-11	6.641E-08
Ra-226	U-238	9.999E-01	5.294E-24	7.991E-23	9.455E-22	2.639E-20	7.475E-19	4.470E-17	5.192E-15	6.193E-11
Ra-226	ΣDOSE(j)		7.467E-18	5.260E-17	2.820E-16	2.656E-15	2.594E-14	4.714E-13	1.836E-11	6.647E-08
Pb-210	U-234	1.000E+00	7.355E-27	1.104E-25	1.291E-24	3.459E-23	8.780E-22	3.902E-20	3.012E-18	8.918E-09
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	3.286E-30	2.620E-28	1.980E-26	3.104E-24	7.795E-22	8.362E-12
Pb-210	ΣDOSE(j)		7.355E-27	1.104E-25	1.292E-24	3.459E-23	8.781E-22	3.902E-20	3.012E-18	8.926E-09
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.438E-10
U-238	U-238	9.999E-01	3.656E-12	3.688E-12	3.754E-12	3.992E-12	4.758E-12	8.802E-12	5.105E-11	4.782E-06
U-238	ΣDOSE(j)		3.656E-12	3.688E-12	3.754E-12	3.992E-12	4.758E-12	8.802E-12	5.105E-11	4.782E-06

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Deep CSM- AF 10 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM- AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.36 seconds

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Summary : Hematite - Deep CSM- AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 100 m^2

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM- AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsat. zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsat. zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsat. zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsat. zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

[illegible]

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.465E-05	0.0000	5.577E-07	0.0000	0.000E+00	0.0000	6.781E-08	0.0000	5.026E-10	0.0000	4.222E-11	0.0000	1.528E-05	0.0000
Np-237	4.093E-01	0.9590	1.558E-02	0.0365	0.000E+00	0.0000	1.895E-03	0.0044	1.405E-05	0.0000	1.180E-06	0.0000	4.268E-01	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.783E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.290E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.441E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.912E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.472E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.104E-10	0.0000
Total	4.094E-01	0.9590	1.558E-02	0.0365	0.000E+00	0.0000	1.895E-03	0.0044	1.405E-05	0.0000	1.180E-06	0.0000	4.268E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.959E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.441E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.221E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.262E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.482E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	8.161E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.098E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.796E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.821E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.959E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.221E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.482E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.161E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.098E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.796E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.821E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.199E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.468E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.334E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.217E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.514E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.749E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.129E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.830E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.855E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.468E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.334E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.749E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.830E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.855E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.858E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.524E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.565E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.802E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.579E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	3.082E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.234E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.898E-12	0.9935	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.923E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.858E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.565E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.802E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.082E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.898E-12	0.9935
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.923E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.241E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.728E-14	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	9.423E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.225E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.832E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.902E-15	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.050E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.145E-12	0.9927	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.175E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.241E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.728E-14	0.0065
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.423E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.225E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-15	0.0007
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.145E-12	0.9927
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.175E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.328E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.411E-14	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.238E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.720E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.799E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.835E-14	0.0057	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.279E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.941E-12	0.9874	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.004E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.328E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.411E-14	0.0068
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.238E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.720E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.835E-14	0.0057
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.279E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E-12	0.9874
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.004E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.332E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.483E-14	0.0077	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.220E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.428E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.234E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.151E-13	0.0529	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.743E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	9.139E-12	0.9385	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.738E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.483E-14	0.0077
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.428E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-27	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-13	0.0529
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.139E-12	0.9385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.738E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.045E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.113E-13	0.0096	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	4.957E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.822E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.550E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.006E-11	0.2711	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.263E-13	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.301E-11	0.7163	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.401E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.045E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.113E-13	0.0096
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.822E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.550E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.006E-11	0.2711
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.263E-13	0.0031
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.301E-11	0.7163
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.401E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.795E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.538E-06	0.0000	3.954E-11	0.0000	4.155E-12	0.0000	0.000E+00	0.0000
Np-237	1.715E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.977E-05	0.0003	3.353E-08	0.0000	1.033E-09	0.0000	0.000E+00	0.0000
Pu-239	6.963E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.041E-06	0.0000	2.960E-10	0.0000	8.994E-12	0.0000	0.000E+00	0.0000
Pu-240	8.430E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.518E-06	0.0000	2.740E-10	0.0000	8.363E-12	0.0000	0.000E+00	0.0000
Tc-99	2.369E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-05	0.0001	9.578E-10	0.0000	2.969E-08	0.0000	0.000E+00	0.0000
U-234	3.849E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-06	0.0000	1.046E-09	0.0000	1.688E-09	0.0000	0.000E+00	0.0000
U-235	8.427E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.049E-06	0.0000	8.490E-10	0.0000	1.211E-09	0.0000	0.000E+00	0.0000
U-238	2.512E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-06	0.0000	8.428E-10	0.0000	1.194E-09	0.0000	0.000E+00	0.0000
Total	6.617E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.275E-04	0.0004	3.784E-08	0.0000	3.484E-08	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.059E-05	0.0001	1.545E-06	0.0000	0.000E+00	0.0000	1.878E-07	0.0000	1.393E-09	0.0000	1.173E-10	0.0000	4.386E-05	0.0001
Np-237	2.913E-01	0.9580	1.109E-02	0.0365	0.000E+00	0.0000	1.348E-03	0.0044	1.000E-05	0.0000	8.448E-07	0.0000	3.039E-01	0.9992
Pu-239	5.602E-14	0.0000	5.642E-16	0.0000	0.000E+00	0.0000	2.560E-16	0.0000	2.324E-18	0.0000	9.574E-18	0.0000	7.042E-06	0.0000
Pu-240	1.693E-12	0.0000	1.703E-14	0.0000	0.000E+00	0.0000	7.738E-15	0.0000	7.028E-17	0.0000	2.895E-16	0.0000	6.518E-06	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.305E-05	0.0001
U-234	4.785E-05	0.0002	4.846E-07	0.0000	0.000E+00	0.0000	2.194E-07	0.0000	2.057E-09	0.0000	8.222E-09	0.0000	5.063E-05	0.0002
U-235	4.533E-05	0.0001	4.592E-07	0.0000	0.000E+00	0.0000	2.079E-07	0.0000	1.949E-09	0.0000	7.789E-09	0.0000	5.206E-05	0.0002
U-238	4.570E-05	0.0002	4.628E-07	0.0000	0.000E+00	0.0000	2.096E-07	0.0000	1.964E-09	0.0000	7.852E-09	0.0000	4.795E-05	0.0002
Total	2.915E-01	0.9586	1.109E-02	0.0365	0.000E+00	0.0000	1.349E-03	0.0044	1.001E-05	0.0000	8.688E-07	0.0000	3.041E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 100 m^2

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	1.520E-06
Am-241	Np-237+D	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	4.234E-05
Am-241	U-233	1.000E+00	3.714E-32	2.629E-31	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	2.574E-09
Am-241	Th-229+D	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	1.174E-12
Am-241	ΣDSR (j)		3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.328E-19	2.332E-18	6.045E-17	4.386E-05
Np-237+D	Np-237+D	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	3.038E-01
Np-237+D	U-233	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	3.579E-05
Np-237+D	Th-229+D	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.279E-08
Np-237+D	ΣDSR (j)		2.441E-14	2.468E-14	2.524E-14	2.728E-14	3.411E-14	7.483E-14	7.113E-13	3.039E-01
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.042E-06
Pu-239	U-235+D	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	1.774E-12
Pu-239	Pa-231	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-12
Pu-239	Ac-227+D	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.707E-13
Pu-239	ΣDSR (j)		8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.220E-19	4.957E-18	7.042E-06
Pu-240	Pu-240	4.950E-08	5.508E-37	5.631E-37	5.884E-37	6.863E-37	1.065E-36	4.962E-36	4.027E-34	3.226E-13
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-06
Pu-240	U-236	1.000E+00	7.656E-35	2.338E-34	5.672E-34	1.955E-33	8.448E-33	1.118E-31	1.778E-29	5.160E-11
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	1.401E-44	1.359E-43	1.738E-42	8.172E-41	4.825E-38	3.596E-18
Pu-240	Ra-228+D	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.419E-16
Pu-240	Th-228+D	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	8.336E-17
Pu-240	ΣDSR (j)		1.262E-28	3.217E-27	6.802E-26	3.225E-24	8.720E-23	2.428E-21	8.822E-20	6.518E-06
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.305E-05
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	5.018E-05
U-234	Th-230	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.782E-09
U-234	Ra-226+D	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.504E-07
U-234	Pb-210+D	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	8.918E-08
U-234	ΣDSR (j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	5.063E-05
U-235+D	U-235+D	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.754E-05
U-235+D	Pa-231	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.977E-06
U-235+D	Ac-227+D	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.457E-07
U-235+D	ΣDSR (j)		1.098E-16	1.129E-16	1.234E-16	2.050E-16	8.279E-16	8.743E-15	2.263E-13	5.206E-05
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.448E-09
U-238+D	U-238+D	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.780E-05
U-238+D	U-234	9.999E-01	4.607E-32	1.406E-31	3.408E-31	1.171E-30	5.009E-30	6.405E-29	9.222E-27	1.425E-07
U-238+D	Th-230	9.999E-01	2.932E-36	2.086E-35	1.143E-34	1.166E-33	1.430E-32	5.771E-31	2.198E-28	1.187E-11
U-238+D	Ra-226+D	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	3.267E-10
U-238+D	Pb-210+D	9.999E-01	4.347E-33	1.347E-31	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	8.363E-11
U-238+D	ΣDSR (j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.794E-05

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Deep CSM- AF 100 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	5.700E+05
Np-237	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	8.227E+01
Pu-239	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	3.550E+06
Pu-240	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	3.836E+06
Tc-99	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	1.085E+06
U-234	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	4.938E+05
U-235	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	4.802E+05
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	1.000E+03	4.386E-05	5.700E+05	1.528E-05	1.636E+06
Np-237	1.000E+00	595 ± 1	4.268E-01	5.857E+01	4.268E-01	5.857E+01
Pu-239	1.000E+00	1.000E+03	7.042E-06	3.550E+06	2.783E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	6.518E-06	3.836E+06	2.290E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	2.305E-05	1.085E+06	4.441E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	5.063E-05	4.938E+05	6.912E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	5.206E-05	4.802E+05	8.472E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	4.795E-05	*3.361E+05	7.104E-10	*3.361E+05

*At specific activity limit

Summary : Hematite - Deep CSM- AF 100 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.520E-06
Np-237	Am-241	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	4.234E-05
Np-237	Np-237	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	3.038E-01
Np-237	ΣDOSE (j)		2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.408E-14	7.423E-14	6.867E-13	3.039E-01
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	2.574E-09
U-233	Np-237	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	3.579E-05
U-233	ΣDOSE (j)		3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.139E-23	2.665E-22	1.192E-20	3.579E-05
Th-229	Am-241	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	1.174E-12
Th-229	Np-237	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.279E-08
Th-229	ΣDOSE (j)		9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.279E-08
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.042E-06
U-235	Pu-239	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	1.774E-12
U-235	U-235	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.754E-05
U-235	ΣDOSE (j)		1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.754E-05
Pa-231	Pu-239	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-12
Pa-231	U-235	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.977E-06
Pa-231	ΣDOSE (j)		8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.977E-06
Ac-227	Pu-239	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.707E-13
Ac-227	U-235	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.457E-07
Ac-227	ΣDOSE (j)		2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.457E-07
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.226E-13
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-06
Pu-240	ΣDOSE (j)		1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-06
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-29	5.160E-11
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.596E-18
Ra-228	Pu-240	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.419E-16
Th-228	Pu-240	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	8.336E-17
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.305E-05
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	5.018E-05
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	1.171E-30	5.009E-30	6.405E-29	9.222E-27	1.425E-07
U-234	ΣDOSE (j)		3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.793E-26	2.248E-25	1.083E-23	5.032E-05
Th-230	U-234	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.782E-09
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-28	1.187E-11
Th-230	ΣDOSE (j)		3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.239E-25	8.794E-09

Summary : Hematite - Deep CSM- AF 100 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.504E-07
Ra-226	U-238	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	3.267E-10
Ra-226	ΣDOSE(j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.007E-11	3.507E-07
Pb-210	U-234	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	8.918E-08
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	8.363E-11
Pb-210	ΣDOSE(j)		7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.052E-20	3.128E-18	8.926E-08
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.448E-09
U-238	U-238	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.780E-05
U-238	ΣDOSE(j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.780E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM- AF 100 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.58 seconds

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Time = 3.000E+00	18
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Summary : Hematite - Deep CSM- AF 1,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Deep CSM- AF 1,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM- AF 1,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Deep CSM- AF 1,000 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Deep CSM- AF 1,000 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Deep CSM- AF 1,000 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Deep CSM- AF 1,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Deep CSM- AF 1,000 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Deep CSM- AF 1,000 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep CSM- AF 1,000 m²

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1000.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TD_{DOSE}(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDose(t):	3.821E-12	3.855E-12	3.923E-12	4.175E-12	5.004E-12	9.738E-12	7.401E-11	3.163E+00
M(t):	1.528E-13	1.542E-13	1.569E-13	1.670E-13	2.002E-13	3.895E-13	2.960E-12	1.265E-01

Maximum TDOSE(t): 4.440E+00 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

Summary : Hematite - Deep CSM- AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.465E-04	0.0000	5.577E-06	0.0000	0.000E+00	0.0000	6.781E-06	0.0000	5.026E-08	0.0000	4.222E-09	0.0000	1.589E-04	0.0000
Np-237	4.093E+00	0.9219	1.558E-01	0.0351	0.000E+00	0.0000	1.895E-01	0.0427	1.405E-03	0.0003	1.180E-04	0.0000	4.440E+00	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.783E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.290E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.441E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.912E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.472E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.104E-10	0.0000
Total	4.094E+00	0.9219	1.558E-01	0.0351	0.000E+00	0.0000	1.895E-01	0.0427	1.405E-03	0.0003	1.180E-04	0.0000	4.440E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.959E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.441E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.221E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.262E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.482E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	8.161E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.098E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.796E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.821E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.959E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.221E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.482E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.161E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.098E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.796E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.821E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.199E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.468E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.334E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.217E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.514E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.749E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.129E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.830E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.855E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.468E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.334E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.749E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.830E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.855E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.858E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.524E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.565E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.802E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.579E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	3.082E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.234E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.898E-12	0.9935	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.923E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.858E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.565E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.802E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.082E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.898E-12	0.9935
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.923E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.241E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.728E-14	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	9.423E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.225E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.832E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.902E-15	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.050E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.145E-12	0.9927	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.175E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.241E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.728E-14	0.0065
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.423E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.225E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-15	0.0007
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.145E-12	0.9927
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.175E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.328E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.411E-14	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.238E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.720E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.799E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.835E-14	0.0057	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.279E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.941E-12	0.9874	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.004E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.328E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.411E-14	0.0068
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.238E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.720E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.835E-14	0.0057
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.279E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E-12	0.9874
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.004E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.332E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.483E-14	0.0077	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.220E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.428E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.234E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.151E-13	0.0529	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.743E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	9.139E-12	0.9385	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.738E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.483E-14	0.0077
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.428E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-27	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-13	0.0529
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.139E-12	0.9385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.738E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.045E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.113E-13	0.0096	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	4.957E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.822E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.550E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.006E-11	0.2711	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.263E-13	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.301E-11	0.7163	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.401E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.045E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.113E-13	0.0096
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.822E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.550E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.006E-11	0.2711
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.263E-13	0.0031
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.301E-11	0.7163
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.401E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.795E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.538E-05	0.0000	3.954E-10	0.0000	4.155E-11	0.0000	0.000E+00	0.0000
Np-237	1.715E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.977E-04	0.0003	3.353E-07	0.0000	1.033E-08	0.0000	0.000E+00	0.0000
Pu-239	6.963E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.041E-05	0.0000	2.960E-09	0.0000	8.994E-11	0.0000	0.000E+00	0.0000
Pu-240	8.430E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.518E-05	0.0000	2.740E-09	0.0000	8.363E-11	0.0000	0.000E+00	0.0000
Tc-99	2.369E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-04	0.0001	9.578E-09	0.0000	2.969E-07	0.0000	0.000E+00	0.0000
U-234	3.849E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-05	0.0000	1.046E-08	0.0000	1.688E-08	0.0000	0.000E+00	0.0000
U-235	8.427E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.049E-05	0.0000	8.490E-09	0.0000	1.211E-08	0.0000	0.000E+00	0.0000
U-238	2.512E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-05	0.0000	8.428E-09	0.0000	1.194E-08	0.0000	0.000E+00	0.0000
Total	6.617E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.275E-03	0.0004	3.784E-07	0.0000	3.484E-07	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.059E-04	0.0001	1.545E-05	0.0000	0.000E+00	0.0000	1.878E-05	0.0000	1.393E-07	0.0000	1.173E-08	0.0000	4.556E-04	0.0001
Np-237	2.913E+00	0.9210	1.109E-01	0.0351	0.000E+00	0.0000	1.348E-01	0.0426	1.000E-03	0.0003	8.448E-05	0.0000	3.161E+00	0.9992
Pu-239	5.602E-13	0.0000	5.642E-15	0.0000	0.000E+00	0.0000	2.560E-14	0.0000	2.324E-16	0.0000	9.574E-16	0.0000	7.042E-05	0.0000
Pu-240	1.693E-11	0.0000	1.703E-13	0.0000	0.000E+00	0.0000	7.738E-13	0.0000	7.028E-15	0.0000	2.895E-14	0.0000	6.518E-05	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.305E-04	0.0001
U-234	4.785E-04	0.0002	4.846E-06	0.0000	0.000E+00	0.0000	2.194E-05	0.0000	2.057E-07	0.0000	8.222E-07	0.0000	5.266E-04	0.0002
U-235	4.533E-04	0.0001	4.592E-06	0.0000	0.000E+00	0.0000	2.079E-05	0.0000	1.949E-07	0.0000	7.789E-07	0.0000	5.402E-04	0.0002
U-238	4.570E-04	0.0001	4.628E-06	0.0000	0.000E+00	0.0000	2.096E-05	0.0000	1.964E-07	0.0000	7.852E-07	0.0000	4.990E-04	0.0002
Total	2.915E+00	0.9215	1.109E-01	0.0351	0.000E+00	0.0000	1.349E-01	0.0427	1.001E-03	0.0003	8.688E-05	0.0000	3.163E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	1.520E-05
Am-241	Np-237+D	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	4.404E-04
Am-241	U-233	1.000E+00	3.714E-32	2.629E-31	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	2.684E-08
Am-241	Th-229+D	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	1.211E-11
Am-241	ΣDSR (j)		3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.328E-19	2.332E-18	6.045E-17	4.556E-04
Np-237+D	Np-237+D	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	3.161E+00
Np-237+D	U-233	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	3.732E-04
Np-237+D	Th-229+D	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.356E-07
Np-237+D	ΣDSR (j)		2.441E-14	2.468E-14	2.524E-14	2.728E-14	3.411E-14	7.483E-14	7.113E-13	3.161E+00
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.042E-05
Pu-239	U-235+D	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	1.776E-11
Pu-239	Pa-231	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-11
Pu-239	Ac-227+D	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.703E-12
Pu-239	ΣDSR (j)		8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.220E-19	4.957E-18	7.042E-05
Pu-240	Pu-240	4.950E-08	5.508E-37	5.631E-37	5.884E-37	6.863E-37	1.065E-36	4.962E-36	4.027E-34	3.226E-12
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-05
Pu-240	U-236	1.000E+00	7.656E-35	2.338E-34	5.672E-34	1.955E-33	8.448E-33	1.118E-31	1.778E-29	5.167E-10
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	1.401E-44	1.359E-43	1.738E-42	8.172E-41	4.825E-38	3.596E-17
Pu-240	Ra-228+D	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.393E-15
Pu-240	Th-228+D	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	1.008E-16
Pu-240	ΣDSR (j)		1.262E-28	3.217E-27	6.802E-26	3.225E-24	8.720E-23	2.428E-21	8.822E-20	6.518E-05
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.305E-04
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	5.225E-04
U-234	Th-230	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.783E-08
U-234	Ra-226+D	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.157E-06
U-234	Pb-210+D	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	8.918E-07
U-234	ΣDSR (j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	5.266E-04
U-235+D	U-235+D	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.950E-04
U-235+D	Pa-231	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.977E-05
U-235+D	Ac-227+D	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.451E-06
U-235+D	ΣDSR (j)		1.098E-16	1.129E-16	1.234E-16	2.050E-16	8.279E-16	8.743E-15	2.263E-13	5.402E-04
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.549E-08
U-238+D	U-238+D	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.975E-04
U-238+D	U-234	9.999E-01	4.607E-32	1.406E-31	3.408E-31	1.171E-30	5.009E-30	6.405E-29	9.222E-27	1.484E-06
U-238+D	Th-230	9.999E-01	2.932E-36	2.086E-35	1.143E-34	1.166E-33	1.430E-32	5.771E-31	2.198E-28	1.187E-10
U-238+D	Ra-226+D	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	2.944E-09
U-238+D	Pb-210+D	9.999E-01	4.347E-33	1.347E-31	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	8.372E-10
U-238+D	ΣDSR (j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.990E-04

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	5.487E+04
Np-237		*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	7.909E+00
Pu-239		*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	3.550E+05
Pu-240		*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	3.836E+05
Tc-99		*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	1.085E+05
U-234		*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	4.748E+04
U-235		*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	4.628E+04
U-238		*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	5.010E+04

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	1.000E+03	4.556E-04	5.487E+04	1.589E-04	1.573E+05
Np-237	1.000E+00	595 ± 1	4.440E+00	5.630E+00	4.440E+00	5.630E+00
Pu-239	1.000E+00	1.000E+03	7.042E-05	3.550E+05	2.783E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	6.518E-05	3.836E+05	2.290E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	2.305E-04	1.085E+05	4.441E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	5.266E-04	4.748E+04	6.912E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	5.402E-04	4.628E+04	8.472E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	4.990E-04	5.010E+04	7.104E-10	*3.361E+05

*At specific activity limit

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.520E-05
Np-237	Am-241	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	4.404E-04
Np-237	Np-237	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	3.161E+00
Np-237	ΣDOSE (j)		2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.408E-14	7.423E-14	6.867E-13	3.161E+00
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	2.684E-08
U-233	Np-237	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	3.732E-04
U-233	ΣDOSE (j)		3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.139E-23	2.665E-22	1.192E-20	3.732E-04
Th-229	Am-241	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	1.211E-11
Th-229	Np-237	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.356E-07
Th-229	ΣDOSE (j)		9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.356E-07
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.042E-05
U-235	Pu-239	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	1.776E-11
U-235	U-235	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.950E-04
U-235	ΣDOSE (j)		1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.950E-04
Pa-231	Pu-239	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-11
Pa-231	U-235	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.977E-05
Pa-231	ΣDOSE (j)		8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.977E-05
Ac-227	Pu-239	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.703E-12
Ac-227	U-235	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.451E-06
Ac-227	ΣDOSE (j)		2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.451E-06
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.226E-12
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-05
Pu-240	ΣDOSE (j)		1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-05
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-29	5.167E-10
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.596E-17
Ra-228	Pu-240	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.393E-15
Th-228	Pu-240	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	1.008E-16
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.305E-04
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	5.225E-04
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	1.171E-30	5.009E-30	6.405E-29	9.222E-27	1.484E-06
U-234	ΣDOSE (j)		3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.793E-26	2.248E-25	1.083E-23	5.239E-04
Th-230	U-234	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.783E-08
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-28	1.187E-10
Th-230	ΣDOSE (j)		3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.239E-25	8.795E-08

Summary : Hematite - Deep CSM- AF 1,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.157E-06
Ra-226	U-238	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	2.944E-09
Ra-226	ΣDOSE(j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.007E-11	3.160E-06
Pb-210	U-234	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	8.918E-07
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	8.372E-10
Pb-210	ΣDOSE(j)		7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.052E-20	3.128E-18	8.926E-07
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.549E-08
U-238	U-238	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.975E-04
U-238	ΣDOSE(j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.975E-04

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM- AF 1,000 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 4.73 seconds

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Summary : Hematite - Deep CSM- AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Deep CSM- AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM- AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Deep CSM- AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Deep CSM- AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Deep CSM- AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Deep CSM- AF 10,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Deep CSM- AF 10,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Deep CSM- AF 10,000 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep CSM- AF 10,000 m²

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10000.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TD0SE (t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.821E-12	3.855E-12	3.923E-12	4.175E-12	5.004E-12	9.738E-12	7.401E-11	3.172E+01
M(t):	1.528E-13	1.542E-13	1.569E-13	1.670E-13	2.002E-13	3.895E-13	2.960E-12	1.269E+00

Maximum TDOSE(t): 4.454E+01 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

Summary : Hematite - Deep CSM- AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.465E-03	0.0000	5.577E-05	0.0000	0.000E+00	0.0000	6.781E-05	0.0000	5.026E-06	0.0000	4.222E-07	0.0000	1.594E-03	0.0000
Np-237	4.093E+01	0.9190	1.558E+00	0.0350	0.000E+00	0.0000	1.895E+00	0.0425	1.405E-01	0.0032	1.180E-02	0.0003	4.454E+01	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.783E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.290E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.441E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.912E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.472E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.104E-10	0.0000
Total	4.094E+01	0.9191	1.558E+00	0.0350	0.000E+00	0.0000	1.895E+00	0.0425	1.405E-01	0.0032	1.180E-02	0.0003	4.454E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.959E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.441E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.221E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.262E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.482E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	8.161E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.098E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.796E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.821E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.959E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.221E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.482E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.161E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.098E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.796E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.821E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.199E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.468E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.334E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.217E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.514E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.749E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.129E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.830E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.855E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.468E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.334E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.749E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.830E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.855E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.858E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.524E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.565E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.802E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.579E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	3.082E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.234E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.898E-12	0.9935	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.923E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.858E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.565E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.802E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.082E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.898E-12	0.9935
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.923E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.241E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.728E-14	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	9.423E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.225E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.832E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.902E-15	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.050E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.145E-12	0.9927	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.175E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.241E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.728E-14	0.0065
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.423E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.225E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-15	0.0007
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.145E-12	0.9927
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.175E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.328E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.411E-14	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.238E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.720E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.799E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.835E-14	0.0057	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.279E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.941E-12	0.9874	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.004E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.328E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.411E-14	0.0068
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.238E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.720E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.835E-14	0.0057
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.279E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E-12	0.9874
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.004E-12	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.332E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.483E-14	0.0077	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.220E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.428E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.234E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.151E-13	0.0529	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.743E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	9.139E-12	0.9385	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.738E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.483E-14	0.0077
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.428E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-27	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-13	0.0529
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.139E-12	0.9385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.738E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.045E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.113E-13	0.0096	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	4.957E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.822E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.550E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.006E-11	0.2711	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.263E-13	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.301E-11	0.7163	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.401E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.045E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.113E-13	0.0096
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.822E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.550E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.006E-11	0.2711
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.263E-13	0.0031
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.301E-11	0.7163
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.401E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.795E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.538E-05	0.0000	3.954E-09	0.0000	4.155E-10	0.0000	0.000E+00	0.0000
Np-237	1.715E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.977E-04	0.0000	3.353E-06	0.0000	1.033E-07	0.0000	0.000E+00	0.0000
Pu-239	6.963E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.041E-05	0.0000	2.960E-08	0.0000	8.994E-10	0.0000	0.000E+00	0.0000
Pu-240	8.430E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.518E-05	0.0000	2.740E-08	0.0000	8.363E-10	0.0000	0.000E+00	0.0000
Tc-99	2.369E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-04	0.0000	9.578E-08	0.0000	2.969E-06	0.0000	0.000E+00	0.0000
U-234	3.849E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-05	0.0000	1.046E-07	0.0000	1.688E-07	0.0000	0.000E+00	0.0000
U-235	8.427E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.049E-05	0.0000	8.490E-08	0.0000	1.211E-07	0.0000	0.000E+00	0.0000
U-238	2.512E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-05	0.0000	8.428E-08	0.0000	1.194E-07	0.0000	0.000E+00	0.0000
Total	6.617E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.275E-03	0.0000	3.784E-06	0.0000	3.484E-06	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.059E-03	0.0001	1.545E-04	0.0000	0.000E+00	0.0000	1.878E-04	0.0000	1.393E-05	0.0000	1.173E-06	0.0000	4.431E-03	0.0001
Np-237	2.913E+01	0.9185	1.109E+00	0.0350	0.000E+00	0.0000	1.348E+00	0.0425	1.000E-01	0.0032	8.448E-03	0.0003	3.170E+01	0.9994
Pu-239	5.602E-12	0.0000	5.642E-14	0.0000	0.000E+00	0.0000	2.560E-13	0.0000	2.324E-14	0.0000	9.574E-14	0.0000	7.044E-05	0.0000
Pu-240	1.693E-10	0.0000	1.703E-12	0.0000	0.000E+00	0.0000	7.738E-12	0.0000	7.028E-13	0.0000	2.895E-12	0.0000	6.520E-05	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-04	0.0000
U-234	4.785E-03	0.0002	4.846E-05	0.0000	0.000E+00	0.0000	2.194E-04	0.0000	2.057E-05	0.0000	8.222E-05	0.0000	5.176E-03	0.0002
U-235	4.533E-03	0.0001	4.592E-05	0.0000	0.000E+00	0.0000	2.079E-04	0.0000	1.949E-05	0.0000	7.789E-05	0.0000	4.945E-03	0.0002
U-238	4.570E-03	0.0001	4.628E-05	0.0000	0.000E+00	0.0000	2.096E-04	0.0000	1.964E-05	0.0000	7.852E-05	0.0000	4.939E-03	0.0002
Total	2.915E+01	0.9190	1.109E+00	0.0350	0.000E+00	0.0000	1.349E+00	0.0425	1.001E-01	0.0032	8.688E-03	0.0003	3.172E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	1.520E-05
Am-241	Np-237+D	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	4.416E-03
Am-241	U-233	1.000E+00	3.714E-32	2.629E-31	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	2.733E-07
Am-241	Th-229+D	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	1.127E-10
Am-241	ΣDSR (j)		3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.328E-19	2.332E-18	6.045E-17	4.431E-03
Np-237+D	Np-237+D	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	3.170E+01
Np-237+D	U-233	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	3.800E-03
Np-237+D	Th-229+D	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.254E-06
Np-237+D	ΣDSR (j)		2.441E-14	2.468E-14	2.524E-14	2.728E-14	3.411E-14	7.483E-14	7.113E-13	3.170E+01
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.044E-05
Pu-239	U-235+D	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	2.340E-11
Pu-239	Pa-231	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-11
Pu-239	Ac-227+D	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.705E-12
Pu-239	ΣDSR (j)		8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.220E-19	4.957E-18	7.044E-05
Pu-240	Pu-240	4.950E-08	5.508E-37	5.631E-37	5.884E-37	6.863E-37	1.065E-36	4.962E-36	4.027E-34	3.228E-12
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.520E-05
Pu-240	U-236	1.000E+00	7.656E-35	2.338E-34	5.672E-34	1.955E-33	8.448E-33	1.118E-31	1.778E-29	6.871E-10
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	1.401E-44	1.359E-43	1.738E-42	8.172E-41	4.825E-38	3.599E-17
Pu-240	Ra-228+D	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.414E-15
Pu-240	Th-228+D	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	1.009E-16
Pu-240	ΣDSR (j)		1.262E-28	3.217E-27	6.802E-26	3.225E-24	8.720E-23	2.428E-21	8.822E-20	6.520E-05
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.332E-04
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	5.172E-03
U-234	Th-230	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.830E-08
U-234	Ra-226+D	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.205E-06
U-234	Pb-210+D	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	8.982E-07
U-234	ΣDSR (j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	5.176E-03
U-235+D	U-235+D	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.900E-03
U-235+D	Pa-231	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.999E-05
U-235+D	Ac-227+D	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.472E-06
U-235+D	ΣDSR (j)		1.098E-16	1.129E-16	1.234E-16	2.050E-16	8.279E-16	8.743E-15	2.263E-13	4.945E-03
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.524E-07
U-238+D	U-238+D	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.924E-03
U-238+D	U-234	9.999E-01	4.607E-32	1.406E-31	3.408E-31	1.171E-30	5.009E-30	6.405E-29	9.222E-27	1.469E-05
U-238+D	Th-230	9.999E-01	2.932E-36	2.086E-35	1.143E-34	1.166E-33	1.430E-32	5.771E-31	2.198E-28	1.201E-10
U-238+D	Ra-226+D	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	2.993E-09
U-238+D	Pb-210+D	9.999E-01	4.347E-33	1.347E-31	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	1.115E-09
U-238+D	ΣDSR (j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.939E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	5.642E+03
Np-237		*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	7.886E-01
Pu-239		*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	3.549E+05
Pu-240		*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	3.834E+05
Tc-99		*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	1.072E+05
U-234		*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	4.830E+03
U-235		*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	5.056E+03
U-238		*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	5.062E+03

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	1.000E+03	4.431E-03	5.642E+03	1.594E-03	1.568E+04
Np-237	1.000E+00	595 ± 1	4.454E+01	5.613E-01	4.454E+01	5.613E-01
Pu-239	1.000E+00	1.000E+03	7.044E-05	3.549E+05	2.783E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	6.520E-05	3.834E+05	2.290E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	2.332E-04	1.072E+05	4.441E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	5.176E-03	4.830E+03	6.912E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	4.945E-03	5.056E+03	8.472E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	4.939E-03	5.062E+03	7.104E-10	*3.361E+05

*At specific activity limit

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.520E-05
Np-237	Am-241	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	4.416E-03
Np-237	Np-237	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	3.170E+01
Np-237	ΣDOSE (j)		2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.408E-14	7.423E-14	6.867E-13	3.170E+01
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	2.733E-07
U-233	Np-237	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	3.800E-03
U-233	ΣDOSE (j)		3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.139E-23	2.665E-22	1.192E-20	3.800E-03
Th-229	Am-241	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	1.127E-10
Th-229	Np-237	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.254E-06
Th-229	ΣDOSE (j)		9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	2.254E-06
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.044E-05
U-235	Pu-239	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	2.340E-11
U-235	U-235	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.900E-03
U-235	ΣDOSE (j)		1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	4.900E-03
Pa-231	Pu-239	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-11
Pa-231	U-235	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.999E-05
Pa-231	ΣDOSE (j)		8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.999E-05
Ac-227	Pu-239	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.705E-12
Ac-227	U-235	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.472E-06
Ac-227	ΣDOSE (j)		2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.472E-06
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.228E-12
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.520E-05
Pu-240	ΣDOSE (j)		1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.520E-05
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-29	6.871E-10
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.599E-17
Ra-228	Pu-240	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.414E-15
Th-228	Pu-240	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	1.009E-16
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.332E-04
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	5.172E-03
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	1.171E-30	5.009E-30	6.405E-29	9.222E-27	1.469E-05
U-234	ΣDOSE (j)		3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.793E-26	2.248E-25	1.083E-23	5.186E-03
Th-230	U-234	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.830E-08
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-28	1.201E-10
Th-230	ΣDOSE (j)		3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.239E-25	8.842E-08

Summary : Hematite - Deep CSM- AF 10,000 m²

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.205E-06
Ra-226	U-238	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	2.993E-09
Ra-226	ΣDOSE(j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.007E-11	3.208E-06
Pb-210	U-234	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	8.982E-07
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	1.115E-09
Pb-210	ΣDOSE(j)		7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.052E-20	3.128E-18	8.993E-07
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.524E-07
U-238	U-238	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.924E-03
U-238	ΣDOSE(j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	4.924E-03

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Deep CSM- AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 4.12 seconds

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Time = 3.000E+00	18
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Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Deep CSM- AF 3 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TD_{DOSE}(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDose(t):	2.044E-12	2.063E-12	2.099E-12	2.234E-12	2.676E-12	5.183E-12	3.849E-11	9.083E-03
M(t):	8.178E-14	8.250E-14	8.397E-14	8.936E-14	1.071E-13	2.073E-13	1.539E-12	3.633E-04

Maximum TDOSE(t): 1.275E-02 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

Summary : Hematite - Deep CSM- AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.396E-07	0.0000	1.673E-08	0.0000	0.000E+00	0.0000	6.103E-11	0.0000	4.524E-13	0.0000	3.800E-14	0.0000	4.564E-07	0.0000
Np-237	1.228E-02	0.9632	4.675E-04	0.0367	0.000E+00	0.0000	1.705E-06	0.0001	1.264E-08	0.0000	1.062E-09	0.0000	1.275E-02	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.706E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.036E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.204E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.304E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.671E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.798E-10	0.0000
Total	1.228E-02	0.9632	4.675E-04	0.0367	0.000E+00	0.0000	1.705E-06	0.0001	1.264E-08	0.0000	1.062E-09	0.0000	1.275E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.429E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.497E-14	0.0073	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	5.043E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.047E-29	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.069E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	3.900E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	6.743E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	2.029E-12	0.9926	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.044E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.429E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.497E-14	0.0073
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.043E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.047E-29	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.069E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.900E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.743E-17	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.029E-12	0.9926
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.044E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.356E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.514E-14	0.0073	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	5.113E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.463E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.092E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.747E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	6.922E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	2.047E-12	0.9926	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.063E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.356E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-14	0.0073
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.113E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.463E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.092E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.747E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.922E-17	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.047E-12	0.9926
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.063E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.753E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.548E-14	0.0074	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	5.254E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.080E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.140E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.473E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	7.514E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	2.084E-12	0.9925	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.099E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.753E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.548E-14	0.0074
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.254E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.080E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.140E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.473E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.514E-17	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.084E-12	0.9925
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.099E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.669E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	1.674E-14	0.0075	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	5.781E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.458E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.322E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.387E-15	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.203E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	2.216E-12	0.9918	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.234E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.669E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.674E-14	0.0075
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.781E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.458E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.322E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.387E-15	0.0006
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.203E-16	0.0001
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.216E-12	0.9918
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.234E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.042E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.092E-14	0.0078	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	7.595E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.941E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.020E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.355E-14	0.0051	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	4.608E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	2.641E-12	0.9869	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.676E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.092E-14	0.0078
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.595E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.941E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.020E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.355E-14	0.0051
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.608E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.641E-12	0.9869
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.676E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.430E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	4.582E-14	0.0088	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.975E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.097E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.903E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.462E-13	0.0475	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	4.773E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.886E-12	0.9427	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.183E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.430E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.582E-14	0.0088
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.975E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.097E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.903E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.462E-13	0.0475
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.773E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.886E-12	0.9427
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.183E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.698E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	4.331E-13	0.0113	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.039E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.989E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	6.170E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	9.587E-12	0.2491	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.236E-13	0.0032	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	2.834E-11	0.7364	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.849E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.698E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.331E-13	0.0113
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.039E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.989E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.170E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.587E-12	0.2491
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.236E-13	0.0032
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.834E-11	0.7364
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.849E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.322E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.615E-08	0.0000	1.186E-12	0.0000	1.247E-13	0.0000	0.000E+00	0.0000
Np-237	1.044E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.393E-06	0.0003	1.006E-09	0.0000	3.100E-11	0.0000	0.000E+00	0.0000
Pu-239	4.271E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.112E-07	0.0000	8.879E-12	0.0000	2.698E-13	0.0000	0.000E+00	0.0000
Pu-240	3.827E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.955E-07	0.0000	8.219E-12	0.0000	2.509E-13	0.0000	0.000E+00	0.0000
Tc-99	1.710E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.905E-07	0.0001	2.873E-11	0.0000	8.908E-10	0.0000	0.000E+00	0.0000
U-234	1.840E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.072E-08	0.0000	3.139E-11	0.0000	5.064E-11	0.0000	0.000E+00	0.0000
U-235	4.768E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E-07	0.0000	2.547E-11	0.0000	3.632E-11	0.0000	0.000E+00	0.0000
U-238	1.343E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.628E-08	0.0000	2.528E-11	0.0000	3.582E-11	0.0000	0.000E+00	0.0000
Total	3.336E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.825E-06	0.0004	1.135E-09	0.0000	1.045E-09	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.218E-06	0.0001	4.635E-08	0.0000	0.000E+00	0.0000	1.691E-10	0.0000	1.254E-12	0.0000	1.056E-13	0.0000	1.310E-06	0.0001
Np-237	8.740E-03	0.9622	3.327E-04	0.0366	0.000E+00	0.0000	1.214E-06	0.0001	9.001E-09	0.0000	7.603E-10	0.0000	9.076E-03	0.9992
Pu-239	1.680E-15	0.0000	1.693E-17	0.0000	0.000E+00	0.0000	2.304E-19	0.0000	2.092E-21	0.0000	8.617E-21	0.0000	2.112E-07	0.0000
Pu-240	5.080E-14	0.0000	5.110E-16	0.0000	0.000E+00	0.0000	6.964E-18	0.0000	6.325E-20	0.0000	2.606E-19	0.0000	1.955E-07	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.914E-07	0.0001
U-234	1.435E-06	0.0002	1.454E-08	0.0000	0.000E+00	0.0000	1.975E-10	0.0000	1.851E-12	0.0000	7.399E-12	0.0000	1.529E-06	0.0002
U-235	1.360E-06	0.0001	1.378E-08	0.0000	0.000E+00	0.0000	1.871E-10	0.0000	1.754E-12	0.0000	7.010E-12	0.0000	1.556E-06	0.0002
U-238	1.371E-06	0.0002	1.389E-08	0.0000	0.000E+00	0.0000	1.886E-10	0.0000	1.768E-12	0.0000	7.067E-12	0.0000	1.445E-06	0.0002
Total	8.745E-03	0.9628	3.328E-04	0.0366	0.000E+00	0.0000	1.214E-06	0.0001	9.008E-09	0.0000	7.819E-10	0.0000	9.083E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	4.560E-08
Am-241	Np-237+D	1.000E+00	2.429E-21	7.356E-21	1.753E-20	5.669E-20	2.041E-19	1.427E-18	3.663E-17	1.265E-06
Am-241	U-233	1.000E+00	2.388E-32	1.690E-31	9.166E-31	8.989E-30	9.864E-29	2.694E-27	3.370E-25	7.687E-11
Am-241	Th-229+D	1.000E+00	3.559E-28	5.372E-27	6.356E-26	1.774E-24	5.025E-23	3.007E-21	3.513E-19	3.742E-14
Am-241	ΣDSR (j)		2.429E-21	7.356E-21	1.753E-20	5.669E-20	2.042E-19	1.430E-18	3.698E-17	1.310E-06
Np-237+D	Np-237+D	1.000E+00	1.497E-14	1.514E-14	1.548E-14	1.673E-14	2.090E-14	4.554E-14	4.213E-13	9.075E-03
Np-237+D	U-233	1.000E+00	2.210E-25	6.709E-25	1.608E-24	5.301E-24	2.018E-23	1.713E-22	7.665E-21	1.069E-06
Np-237+D	Th-229+D	1.000E+00	4.394E-21	3.096E-20	1.661E-19	1.567E-18	1.540E-17	2.855E-16	1.182E-14	7.093E-10
Np-237+D	ΣDSR (j)		1.497E-14	1.514E-14	1.548E-14	1.674E-14	2.092E-14	4.582E-14	4.331E-13	9.076E-03
Pu-239	Pu-239	1.000E+00	5.043E-20	5.113E-20	5.254E-20	5.781E-20	7.594E-20	1.973E-19	3.021E-18	2.112E-07
Pu-239	U-235+D	1.000E+00	3.320E-26	1.008E-25	2.417E-25	7.987E-25	3.059E-24	2.653E-23	1.262E-21	5.326E-14
Pu-239	Pa-231	1.000E+00	1.627E-29	1.150E-28	6.220E-28	6.034E-27	6.420E-26	1.574E-24	1.443E-22	6.107E-14
Pu-239	Ac-227+D	1.000E+00	3.147E-29	4.728E-28	5.535E-27	1.489E-25	3.826E-24	1.784E-22	1.609E-20	8.309E-15
Pu-239	ΣDSR (j)		5.043E-20	5.113E-20	5.254E-20	5.781E-20	7.595E-20	1.975E-19	3.039E-18	2.112E-07
Pu-240	Pu-240	4.950E-08	3.975E-37	4.063E-37	4.246E-37	4.952E-37	7.686E-37	3.581E-36	2.906E-34	9.679E-15
Pu-240	Pu-240	1.000E+00	8.030E-30	8.208E-30	8.577E-30	1.000E-29	1.553E-29	7.234E-29	5.870E-27	1.955E-07
Pu-240	U-236	1.000E+00	5.525E-35	1.687E-34	4.093E-34	1.411E-33	6.096E-33	8.070E-32	1.283E-29	1.548E-12
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	9.809E-45	9.809E-44	1.253E-42	5.897E-41	3.481E-38	1.079E-19
Pu-240	Ra-228+D	1.000E+00	3.712E-30	5.469E-29	6.135E-28	1.433E-26	2.705E-25	7.411E-24	3.870E-22	5.639E-18
Pu-240	Th-228+D	1.000E+00	4.872E-29	1.400E-27	3.017E-26	1.444E-24	3.914E-23	1.090E-21	3.950E-20	3.683E-17
Pu-240	ΣDSR (j)		6.047E-29	1.463E-27	3.080E-26	1.458E-24	3.941E-23	1.097E-21	3.989E-20	1.955E-07
Tc-99	Tc-99	1.000E+00	1.069E-28	1.092E-28	1.140E-28	1.322E-28	2.020E-28	8.903E-28	6.170E-26	6.914E-07
U-234	U-234	1.000E+00	2.338E-26	2.383E-26	2.478E-26	2.837E-26	4.180E-26	1.622E-25	7.808E-24	1.499E-06
U-234	Th-230	1.000E+00	1.992E-30	6.076E-30	1.471E-29	5.033E-29	2.129E-28	2.617E-27	3.367E-25	2.635E-10
U-234	Ra-226+D	1.000E+00	3.900E-18	2.747E-17	1.473E-16	1.387E-15	1.355E-14	2.462E-13	9.587E-12	2.776E-08
U-234	Pb-210+D	1.000E+00	4.082E-27	6.130E-26	7.169E-25	1.920E-23	4.874E-22	2.166E-20	1.672E-18	2.675E-09
U-234	ΣDSR (j)		3.900E-18	2.747E-17	1.473E-16	1.387E-15	1.355E-14	2.462E-13	9.587E-12	1.529E-06
U-235+D	U-235+D	1.000E+00	6.725E-17	6.818E-17	7.007E-17	7.713E-17	1.014E-16	2.647E-16	4.104E-15	1.420E-06
U-235+D	Pa-231	1.000E+00	4.952E-20	1.501E-19	3.583E-19	1.166E-18	4.269E-18	3.168E-17	9.635E-16	1.193E-07
U-235+D	Ac-227+D	1.000E+00	1.275E-19	8.922E-19	4.709E-18	4.197E-17	3.550E-16	4.476E-15	1.186E-13	1.675E-08
U-235+D	ΣDSR (j)		6.743E-17	6.922E-17	7.514E-17	1.203E-16	4.608E-16	4.773E-15	1.236E-13	1.556E-06
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.313E-11
U-238+D	U-238+D	9.999E-01	2.029E-12	2.047E-12	2.084E-12	2.216E-12	2.641E-12	4.886E-12	2.834E-11	1.440E-06
U-238+D	U-234	9.999E-01	3.324E-32	1.015E-31	2.459E-31	8.447E-31	3.614E-30	4.622E-29	6.655E-27	4.257E-09
U-238+D	Th-230	9.999E-01	1.885E-36	1.341E-35	7.350E-35	7.493E-34	9.193E-33	3.711E-31	1.413E-28	3.561E-13
U-238+D	Ra-226+D	9.999E-01	2.765E-24	4.173E-23	4.938E-22	1.378E-20	3.904E-19	2.335E-17	2.712E-15	2.588E-11
U-238+D	Pb-210+D	9.999E-01	2.324E-33	7.202E-32	1.824E-30	1.454E-28	1.099E-26	1.723E-24	4.329E-22	2.508E-12
U-238+D	ΣDSR (j)		2.029E-12	2.047E-12	2.084E-12	2.216E-12	2.641E-12	4.886E-12	2.834E-11	1.445E-06

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	1.908E+07
Np-237		*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	2.754E+03
Pu-239		*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	1.183E+08
Pu-240		*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	1.279E+08
Tc-99		*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	3.616E+07
U-234		*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	1.635E+07
U-235		*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06
U-238		*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	1.000E+03	1.310E-06	1.908E+07	4.564E-07	5.478E+07
Np-237	1.000E+00	595 ± 1	1.275E-02	1.961E+03	1.275E-02	1.961E+03
Pu-239	1.000E+00	1.000E+03	2.112E-07	1.183E+08	1.706E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	1.955E-07	1.279E+08	1.036E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	6.914E-07	3.616E+07	3.204E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	1.529E-06	1.635E+07	3.304E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	1.556E-06	*2.161E+06	4.671E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	1.445E-06	*3.361E+05	3.798E-10	*3.361E+05

*At specific activity limit

Summary : Hematite - Deep CSM- AF 3 m^2

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June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.560E-08
Np-237	Am-241	1.000E+00	2.429E-21	7.356E-21	1.753E-20	5.669E-20	2.041E-19	1.427E-18	3.663E-17	1.265E-06
Np-237	Np-237	1.000E+00	1.497E-14	1.514E-14	1.548E-14	1.673E-14	2.090E-14	4.554E-14	4.213E-13	9.075E-03
Np-237	ΣDOSE (j)		1.497E-14	1.514E-14	1.548E-14	1.673E-14	2.090E-14	4.554E-14	4.213E-13	9.077E-03
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	8.989E-30	9.864E-29	2.694E-27	3.370E-25	7.687E-11
U-233	Np-237	1.000E+00	2.210E-25	6.709E-25	1.608E-24	5.301E-24	2.018E-23	1.713E-22	7.665E-21	1.069E-06
U-233	ΣDOSE (j)		2.210E-25	6.709E-25	1.608E-24	5.301E-24	2.018E-23	1.713E-22	7.665E-21	1.069E-06
Th-229	Am-241	1.000E+00	3.559E-28	5.372E-27	6.356E-26	1.774E-24	5.025E-23	3.007E-21	3.513E-19	3.742E-14
Th-229	Np-237	1.000E+00	4.394E-21	3.096E-20	1.661E-19	1.567E-18	1.540E-17	2.855E-16	1.182E-14	7.093E-10
Th-229	ΣDOSE (j)		4.394E-21	3.096E-20	1.661E-19	1.567E-18	1.540E-17	2.855E-16	1.182E-14	7.094E-10
Pu-239	Pu-239	1.000E+00	5.043E-20	5.113E-20	5.254E-20	5.781E-20	7.594E-20	1.973E-19	3.021E-18	2.112E-07
U-235	Pu-239	1.000E+00	3.320E-26	1.008E-25	2.417E-25	7.987E-25	3.059E-24	2.653E-23	1.262E-21	5.326E-14
U-235	U-235	1.000E+00	6.725E-17	6.818E-17	7.007E-17	7.713E-17	1.014E-16	2.647E-16	4.104E-15	1.420E-06
U-235	ΣDOSE (j)		6.725E-17	6.818E-17	7.007E-17	7.713E-17	1.014E-16	2.647E-16	4.104E-15	1.420E-06
Pa-231	Pu-239	1.000E+00	1.627E-29	1.150E-28	6.220E-28	6.034E-27	6.420E-26	1.574E-24	1.443E-22	6.107E-14
Pa-231	U-235	1.000E+00	4.952E-20	1.501E-19	3.583E-19	1.166E-18	4.269E-18	3.168E-17	9.635E-16	1.193E-07
Pa-231	ΣDOSE (j)		4.952E-20	1.501E-19	3.583E-19	1.166E-18	4.269E-18	3.168E-17	9.635E-16	1.193E-07
Ac-227	Pu-239	1.000E+00	3.147E-29	4.728E-28	5.535E-27	1.489E-25	3.826E-24	1.784E-22	1.609E-20	8.309E-15
Ac-227	U-235	1.000E+00	1.275E-19	8.922E-19	4.709E-18	4.197E-17	3.550E-16	4.476E-15	1.186E-13	1.675E-08
Ac-227	ΣDOSE (j)		1.275E-19	8.922E-19	4.709E-18	4.197E-17	3.550E-16	4.476E-15	1.186E-13	1.675E-08
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.679E-15
Pu-240	Pu-240	1.000E+00	8.030E-30	8.208E-30	8.577E-30	1.000E-29	1.553E-29	7.234E-29	5.870E-27	1.955E-07
Pu-240	ΣDOSE (j)		8.030E-30	8.208E-30	8.577E-30	1.000E-29	1.553E-29	7.234E-29	5.870E-27	1.955E-07
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.283E-29	1.548E-12
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.079E-19
Ra-228	Pu-240	1.000E+00	3.712E-30	5.469E-29	6.135E-28	1.433E-26	2.705E-25	7.411E-24	3.870E-22	5.639E-18
Th-228	Pu-240	1.000E+00	4.872E-29	1.400E-27	3.017E-26	1.444E-24	3.914E-23	1.090E-21	3.950E-20	3.683E-17
Tc-99	Tc-99	1.000E+00	1.069E-28	1.092E-28	1.140E-28	1.322E-28	2.020E-28	8.903E-28	6.170E-26	6.914E-07
U-234	U-234	1.000E+00	2.338E-26	2.383E-26	2.478E-26	2.837E-26	4.180E-26	1.622E-25	7.808E-24	1.499E-06
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.614E-30	4.622E-29	6.655E-27	4.257E-09
U-234	ΣDOSE (j)		2.338E-26	2.383E-26	2.478E-26	2.837E-26	4.180E-26	1.622E-25	7.815E-24	1.503E-06
Th-230	U-234	1.000E+00	1.992E-30	6.076E-30	1.471E-29	5.033E-29	2.129E-28	2.617E-27	3.367E-25	2.635E-10
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.413E-28	3.561E-13
Th-230	ΣDOSE (j)		1.992E-30	6.076E-30	1.471E-29	5.033E-29	2.129E-28	2.617E-27	3.368E-25	2.638E-10

Summary : Hematite - Deep CSM- AF 3 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	3.900E-18	2.747E-17	1.473E-16	1.387E-15	1.355E-14	2.462E-13	9.587E-12	2.776E-08
Ra-226	U-238	9.999E-01	2.765E-24	4.173E-23	4.938E-22	1.378E-20	3.904E-19	2.335E-17	2.712E-15	2.588E-11
Ra-226	ΣDOSE(j)		3.900E-18	2.747E-17	1.473E-16	1.387E-15	1.355E-14	2.462E-13	9.590E-12	2.779E-08
Pb-210	U-234	1.000E+00	4.082E-27	6.130E-26	7.169E-25	1.920E-23	4.874E-22	2.166E-20	1.672E-18	2.675E-09
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	1.824E-30	1.454E-28	1.099E-26	1.723E-24	4.329E-22	2.508E-12
Pb-210	ΣDOSE(j)		4.082E-27	6.130E-26	7.169E-25	1.920E-23	4.874E-22	2.166E-20	1.673E-18	2.678E-09
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.313E-11
U-238	U-238	9.999E-01	2.029E-12	2.047E-12	2.084E-12	2.216E-12	2.641E-12	4.886E-12	2.834E-11	1.440E-06
U-238	ΣDOSE(j)		2.029E-12	2.047E-12	2.084E-12	2.216E-12	2.641E-12	4.886E-12	2.834E-11	1.440E-06

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM- AF 3 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.47 seconds

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Deep CSM- AF 30 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TD_{DOSE}(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDose(t):	3.821E-12	3.855E-12	3.923E-12	4.175E-12	5.004E-12	9.735E-12	7.391E-11	9.094E-02
M(t):	1.528E-13	1.542E-13	1.569E-13	1.670E-13	2.002E-13	3.894E-13	2.956E-12	3.638E-03

Maximum TDOSE(t): 1.277E-01 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.396E-06	0.0000	1.673E-07	0.0000	0.000E+00	0.0000	6.103E-09	0.0000	4.524E-11	0.0000	3.800E-12	0.0000	4.569E-06	0.0000
Np-237	1.228E-01	0.9620	4.675E-03	0.0366	0.000E+00	0.0000	1.705E-04	0.0013	1.264E-06	0.0000	1.062E-07	0.0000	1.276E-01	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.783E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.265E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.441E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.878E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.472E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.104E-10	0.0000
Total	1.228E-01	0.9620	4.675E-03	0.0366	0.000E+00	0.0000	1.705E-04	0.0013	1.264E-06	0.0000	1.062E-07	0.0000	1.277E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.959E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.441E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.221E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.250E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.482E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	8.121E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.098E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.796E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.821E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.959E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.221E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.250E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.482E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.121E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.098E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.796E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.821E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.199E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.468E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.334E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.183E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.514E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.720E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.129E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.830E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.855E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.468E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.334E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.183E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.720E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.830E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.855E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.858E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.524E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.565E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.729E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.579E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	3.067E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.234E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.898E-12	0.9935	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.923E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.858E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.565E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.729E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.067E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.898E-12	0.9935
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.923E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.241E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.728E-14	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	9.423E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.190E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.832E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.888E-15	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.050E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.145E-12	0.9927	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.175E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.241E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.728E-14	0.0065
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.423E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.190E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.888E-15	0.0007
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.145E-12	0.9927
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.175E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.328E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.411E-14	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.238E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.625E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.799E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.821E-14	0.0056	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.279E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.941E-12	0.9874	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.004E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.328E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.411E-14	0.0068
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.238E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.625E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.821E-14	0.0056
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.279E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E-12	0.9874
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.004E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.332E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.482E-14	0.0077	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.220E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.401E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.234E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.126E-13	0.0527	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.743E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	9.139E-12	0.9388	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.735E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.482E-14	0.0077
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.401E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-27	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.126E-13	0.0527
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.139E-12	0.9388
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.735E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.044E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.111E-13	0.0096	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	4.957E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.726E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.550E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.996E-11	0.2701	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.263E-13	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.301E-11	0.7172	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.391E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.044E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.111E-13	0.0096
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.726E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.550E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.996E-11	0.2701
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.263E-13	0.0031
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.301E-11	0.7172
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.391E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.795E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.615E-07	0.0000	1.186E-11	0.0000	1.247E-12	0.0000	0.000E+00	0.0000
Np-237	1.715E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.393E-05	0.0003	1.006E-08	0.0000	3.100E-10	0.0000	0.000E+00	0.0000
Pu-239	6.963E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.112E-06	0.0000	8.879E-11	0.0000	2.698E-12	0.0000	0.000E+00	0.0000
Pu-240	8.340E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.955E-06	0.0000	8.219E-11	0.0000	2.509E-12	0.0000	0.000E+00	0.0000
Tc-99	2.369E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.905E-06	0.0001	2.873E-10	0.0000	8.908E-09	0.0000	0.000E+00	0.0000
U-234	3.830E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.072E-07	0.0000	3.139E-10	0.0000	5.064E-10	0.0000	0.000E+00	0.0000
U-235	8.427E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E-06	0.0000	2.547E-10	0.0000	3.632E-10	0.0000	0.000E+00	0.0000
U-238	2.512E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.628E-07	0.0000	2.528E-10	0.0000	3.582E-10	0.0000	0.000E+00	0.0000
Total	6.598E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.825E-05	0.0004	1.135E-08	0.0000	1.045E-08	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.218E-05	0.0001	4.635E-07	0.0000	0.000E+00	0.0000	1.691E-08	0.0000	1.254E-10	0.0000	1.056E-11	0.0000	1.312E-05	0.0001
Np-237	8.740E-02	0.9610	3.327E-03	0.0366	0.000E+00	0.0000	1.214E-04	0.0013	9.001E-07	0.0000	7.603E-08	0.0000	9.087E-02	0.9992
Pu-239	1.680E-14	0.0000	1.693E-16	0.0000	0.000E+00	0.0000	2.304E-17	0.0000	2.092E-19	0.0000	8.617E-19	0.0000	2.112E-06	0.0000
Pu-240	5.080E-13	0.0000	5.110E-15	0.0000	0.000E+00	0.0000	6.964E-16	0.0000	6.325E-18	0.0000	2.606E-17	0.0000	1.955E-06	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.914E-06	0.0001
U-234	1.435E-05	0.0002	1.454E-07	0.0000	0.000E+00	0.0000	1.975E-08	0.0000	1.851E-10	0.0000	7.399E-10	0.0000	1.517E-05	0.0002
U-235	1.360E-05	0.0001	1.378E-07	0.0000	0.000E+00	0.0000	1.871E-08	0.0000	1.754E-10	0.0000	7.010E-10	0.0000	1.557E-05	0.0002
U-238	1.371E-05	0.0002	1.389E-07	0.0000	0.000E+00	0.0000	1.886E-08	0.0000	1.768E-10	0.0000	7.067E-10	0.0000	1.436E-05	0.0002
Total	8.745E-02	0.9616	3.328E-03	0.0366	0.000E+00	0.0000	1.214E-04	0.0013	9.008E-07	0.0000	7.819E-08	0.0000	9.094E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 30 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	4.560E-07
Am-241	Np-237+D	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	1.266E-05
Am-241	U-233	1.000E+00	3.714E-32	2.629E-31	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	7.697E-10
Am-241	Th-229+D	1.000E+00	7.384E-28	1.115E-26	1.319E-25	3.680E-24	1.042E-22	6.233E-21	7.268E-19	3.549E-13
Am-241	ΣDSR (j)		3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.328E-19	2.332E-18	6.044E-17	1.312E-05
Np-237+D	Np-237+D	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	9.086E-02
Np-237+D	U-233	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	1.070E-05
Np-237+D	Th-229+D	1.000E+00	9.117E-21	6.424E-20	3.446E-19	3.251E-18	3.194E-17	5.918E-16	2.445E-14	6.860E-09
Np-237+D	ΣDSR (j)		2.441E-14	2.468E-14	2.524E-14	2.728E-14	3.411E-14	7.482E-14	7.111E-13	9.087E-02
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	2.112E-06
Pu-239	U-235+D	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	5.321E-13
Pu-239	Pa-231	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	6.107E-13
Pu-239	Ac-227+D	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	8.145E-14
Pu-239	ΣDSR (j)		8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.220E-19	4.957E-18	2.112E-06
Pu-240	Pu-240	4.950E-08	5.508E-37	5.631E-37	5.884E-37	6.863E-37	1.065E-36	4.962E-36	4.027E-34	9.679E-14
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	1.955E-06
Pu-240	U-236	1.000E+00	7.656E-35	2.338E-34	5.672E-34	1.955E-33	8.448E-33	1.118E-31	1.778E-29	1.548E-11
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	1.401E-44	1.359E-43	1.738E-42	8.172E-41	4.825E-38	1.079E-18
Pu-240	Ra-228+D	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	4.455E-17
Pu-240	Th-228+D	1.000E+00	1.067E-28	3.066E-27	6.609E-26	3.162E-24	8.572E-23	2.387E-21	8.651E-20	8.110E-17
Pu-240	ΣDSR (j)		1.250E-28	3.183E-27	6.729E-26	3.190E-24	8.625E-23	2.401E-21	8.726E-20	1.955E-06
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	6.914E-06
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	1.501E-05
U-234	Th-230	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	2.635E-09
U-234	Ra-226+D	1.000E+00	8.121E-18	5.720E-17	3.067E-16	2.888E-15	2.821E-14	5.126E-13	1.996E-11	1.319E-07
U-234	Pb-210+D	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	2.675E-08
U-234	ΣDSR (j)		8.121E-18	5.720E-17	3.067E-16	2.888E-15	2.821E-14	5.126E-13	1.996E-11	1.517E-05
U-235+D	U-235+D	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.422E-05
U-235+D	Pa-231	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	1.193E-06
U-235+D	Ac-227+D	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	1.642E-07
U-235+D	ΣDSR (j)		1.098E-16	1.129E-16	1.234E-16	2.050E-16	8.279E-16	8.743E-15	2.263E-13	1.557E-05
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.322E-10
U-238+D	U-238+D	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.431E-05
U-238+D	U-234	9.999E-01	4.607E-32	1.406E-31	3.408E-31	1.171E-30	5.009E-30	6.405E-29	9.222E-27	4.262E-08
U-238+D	Th-230	9.999E-01	2.932E-36	2.086E-35	1.143E-34	1.166E-33	1.430E-32	5.771E-31	2.198E-28	3.561E-12
U-238+D	Ra-226+D	9.999E-01	5.757E-24	8.690E-23	1.028E-21	2.870E-20	8.129E-19	4.862E-17	5.647E-15	1.230E-10
U-238+D	Pb-210+D	9.999E-01	4.347E-33	1.347E-31	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	2.509E-11
U-238+D	ΣDSR (j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.435E-05

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Deep CSM- AF 30 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	1.906E+06
Np-237	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	2.751E+02
Pu-239	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	1.183E+07
Pu-240	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	1.279E+07
Tc-99	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	3.616E+06
U-234	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	1.648E+06
U-235	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	1.605E+06
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	1.000E+03	1.312E-05	1.906E+06	4.569E-06	5.471E+06
Np-237	1.000E+00	595 ± 1	1.276E-01	1.959E+02	1.276E-01	1.959E+02
Pu-239	1.000E+00	1.000E+03	2.112E-06	1.183E+07	2.783E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	1.955E-06	1.279E+07	2.265E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	6.914E-06	3.616E+06	4.441E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	1.517E-05	1.648E+06	6.878E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	1.557E-05	1.605E+06	8.472E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	1.436E-05	*3.361E+05	7.104E-10	*3.361E+05

*At specific activity limit

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.560E-07
Np-237	Am-241	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	1.266E-05
Np-237	Np-237	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	9.086E-02
Np-237	ΣDOSE (j)		2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.408E-14	7.423E-14	6.867E-13	9.088E-02
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	7.697E-10
U-233	Np-237	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	1.070E-05
U-233	ΣDOSE (j)		3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.139E-23	2.665E-22	1.192E-20	1.070E-05
Th-229	Am-241	1.000E+00	7.384E-28	1.115E-26	1.319E-25	3.680E-24	1.042E-22	6.233E-21	7.268E-19	3.549E-13
Th-229	Np-237	1.000E+00	9.117E-21	6.424E-20	3.446E-19	3.251E-18	3.194E-17	5.918E-16	2.445E-14	6.860E-09
Th-229	ΣDOSE (j)		9.117E-21	6.424E-20	3.446E-19	3.251E-18	3.194E-17	5.918E-16	2.445E-14	6.860E-09
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	2.112E-06
U-235	Pu-239	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	5.321E-13
U-235	U-235	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.422E-05
U-235	ΣDOSE (j)		1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.422E-05
Pa-231	Pu-239	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	6.107E-13
Pa-231	U-235	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	1.193E-06
Pa-231	ΣDOSE (j)		8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	1.193E-06
Ac-227	Pu-239	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	8.145E-14
Ac-227	U-235	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	1.642E-07
Ac-227	ΣDOSE (j)		2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	1.642E-07
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.679E-14
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	1.955E-06
Pu-240	ΣDOSE (j)		1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	1.955E-06
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-29	1.548E-11
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.079E-18
Ra-228	Pu-240	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	4.455E-17
Th-228	Pu-240	1.000E+00	1.067E-28	3.066E-27	6.609E-26	3.162E-24	8.572E-23	2.387E-21	8.651E-20	8.110E-17
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	6.914E-06
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	1.501E-05
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	1.171E-30	5.009E-30	6.405E-29	9.222E-27	4.262E-08
U-234	ΣDOSE (j)		3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.793E-26	2.248E-25	1.083E-23	1.505E-05
Th-230	U-234	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	2.635E-09
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-28	3.561E-12
Th-230	ΣDOSE (j)		3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.239E-25	2.638E-09

Summary : Hematite - Deep CSM- AF 30 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	8.121E-18	5.720E-17	3.067E-16	2.888E-15	2.821E-14	5.126E-13	1.996E-11	1.319E-07
Ra-226	U-238	9.999E-01	5.757E-24	8.690E-23	1.028E-21	2.870E-20	8.129E-19	4.862E-17	5.647E-15	1.230E-10
Ra-226	ΣDOSE(j)		8.121E-18	5.720E-17	3.067E-16	2.888E-15	2.821E-14	5.126E-13	1.997E-11	1.320E-07
Pb-210	U-234	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	2.675E-08
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	2.509E-11
Pb-210	ΣDOSE(j)		7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.052E-20	3.128E-18	2.678E-08
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.322E-10
U-238	U-238	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.431E-05
U-238	ΣDOSE(j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.431E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM- AF 30 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.59 seconds

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 300 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Deep CSM- AF 300 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Deep CSM- AF 300 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Deep CSM- AF 300 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Deep CSM- AF 300 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Deep CSM- AF 300 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep CSM- AF 300 m²

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	300.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TD0SE (t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.821E-12	3.855E-12	3.923E-12	4.175E-12	5.004E-12	9.738E-12	7.401E-11	9.204E-01
M(t):	1.528E-13	1.542E-13	1.569E-13	1.670E-13	2.002E-13	3.895E-13	2.960E-12	3.682E-02

Maximum TDOSE(t): 1.292E+00 mrem/yr at t = 595 ± 1 years

Total Dose Contributions $TDOSE(i,p,t)$ for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

Summary : Hematite - Deep CSM- AF 300 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.396E-05	0.0000	1.673E-06	0.0000	0.000E+00	0.0000	6.103E-07	0.0000	4.524E-09	0.0000	3.800E-10	0.0000	4.625E-05	0.0000
Np-237	1.228E+00	0.9505	4.675E-02	0.0362	0.000E+00	0.0000	1.705E-02	0.0132	1.264E-04	0.0001	1.062E-05	0.0000	1.292E+00	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.783E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.290E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.441E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.912E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.472E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.104E-10	0.0000
Total	1.228E+00	0.9505	4.675E-02	0.0362	0.000E+00	0.0000	1.705E-02	0.0132	1.264E-04	0.0001	1.062E-05	0.0000	1.292E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.959E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.441E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.221E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.262E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.482E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	8.161E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.098E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.796E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.821E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.959E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.221E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.482E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.161E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.098E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.796E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.821E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.199E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.468E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.334E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.217E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.514E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.749E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.129E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.830E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.855E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.468E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.334E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.749E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.830E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.855E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.858E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.524E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.565E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.802E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.579E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	3.082E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.234E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.898E-12	0.9935	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.923E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.858E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.565E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.802E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.082E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.898E-12	0.9935
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.923E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.241E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.728E-14	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	9.423E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.225E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.832E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.902E-15	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.050E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.145E-12	0.9927	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.175E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.241E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.728E-14	0.0065
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.423E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.225E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-15	0.0007
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.145E-12	0.9927
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.175E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.328E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.411E-14	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.238E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.720E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.799E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.835E-14	0.0057	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.279E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.941E-12	0.9874	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.004E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.328E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.411E-14	0.0068
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.238E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.720E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.835E-14	0.0057
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.279E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E-12	0.9874
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.004E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.332E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.483E-14	0.0077	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.220E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.428E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.234E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.151E-13	0.0529	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.743E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	9.139E-12	0.9385	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.738E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.483E-14	0.0077
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.428E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-27	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-13	0.0529
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.139E-12	0.9385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.738E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.045E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.113E-13	0.0096	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	4.957E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.822E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.550E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.006E-11	0.2711	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.263E-13	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.301E-11	0.7163	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.401E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.045E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.113E-13	0.0096
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.822E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.550E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.006E-11	0.2711
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.263E-13	0.0031
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.301E-11	0.7163
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.401E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.795E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.615E-06	0.0000	1.186E-10	0.0000	1.247E-11	0.0000	0.000E+00	0.0000
Np-237	1.715E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.393E-04	0.0003	1.006E-07	0.0000	3.100E-09	0.0000	0.000E+00	0.0000
Pu-239	6.963E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.112E-05	0.0000	8.879E-10	0.0000	2.698E-11	0.0000	0.000E+00	0.0000
Pu-240	8.430E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.955E-05	0.0000	8.219E-10	0.0000	2.509E-11	0.0000	0.000E+00	0.0000
Tc-99	2.369E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.905E-05	0.0001	2.873E-09	0.0000	8.908E-08	0.0000	0.000E+00	0.0000
U-234	3.849E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.072E-06	0.0000	3.139E-09	0.0000	5.064E-09	0.0000	0.000E+00	0.0000
U-235	8.427E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E-05	0.0000	2.547E-09	0.0000	3.632E-09	0.0000	0.000E+00	0.0000
U-238	2.512E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.628E-06	0.0000	2.528E-09	0.0000	3.582E-09	0.0000	0.000E+00	0.0000
Total	6.617E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.825E-04	0.0004	1.135E-07	0.0000	1.045E-07	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.218E-04	0.0001	4.635E-06	0.0000	0.000E+00	0.0000	1.691E-06	0.0000	1.254E-08	0.0000	1.056E-09	0.0000	1.327E-04	0.0001
Np-237	8.740E-01	0.9495	3.327E-02	0.0361	0.000E+00	0.0000	1.214E-02	0.0132	9.001E-05	0.0001	7.603E-06	0.0000	9.198E-01	0.9992
Pu-239	1.680E-13	0.0000	1.693E-15	0.0000	0.000E+00	0.0000	2.304E-15	0.0000	2.092E-17	0.0000	8.617E-17	0.0000	2.112E-05	0.0000
Pu-240	5.080E-12	0.0000	5.110E-14	0.0000	0.000E+00	0.0000	6.964E-14	0.0000	6.325E-16	0.0000	2.606E-15	0.0000	1.955E-05	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.914E-05	0.0001
U-234	1.435E-04	0.0002	1.454E-06	0.0000	0.000E+00	0.0000	1.975E-06	0.0000	1.851E-08	0.0000	7.399E-08	0.0000	1.532E-04	0.0002
U-235	1.360E-04	0.0001	1.378E-06	0.0000	0.000E+00	0.0000	1.871E-06	0.0000	1.754E-08	0.0000	7.010E-08	0.0000	1.575E-04	0.0002
U-238	1.371E-04	0.0001	1.389E-06	0.0000	0.000E+00	0.0000	1.886E-06	0.0000	1.768E-08	0.0000	7.067E-08	0.0000	1.451E-04	0.0002
Total	8.745E-01	0.9501	3.328E-02	0.0362	0.000E+00	0.0000	1.214E-02	0.0132	9.008E-05	0.0001	7.819E-06	0.0000	9.204E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	4.560E-06
Am-241	Np-237+D	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	1.281E-04
Am-241	U-233	1.000E+00	3.714E-32	2.629E-31	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	7.796E-09
Am-241	Th-229+D	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	3.541E-12
Am-241	ΣDSR (j)		3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.328E-19	2.332E-18	6.045E-17	1.327E-04
Np-237+D	Np-237+D	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	9.196E-01
Np-237+D	U-233	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	1.084E-04
Np-237+D	Th-229+D	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	6.879E-08
Np-237+D	ΣDSR (j)		2.441E-14	2.468E-14	2.524E-14	2.728E-14	3.411E-14	7.483E-14	7.113E-13	9.197E-01
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	2.112E-05
Pu-239	U-235+D	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	5.322E-12
Pu-239	Pa-231	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	6.107E-12
Pu-239	Ac-227+D	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	8.113E-13
Pu-239	ΣDSR (j)		8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.220E-19	4.957E-18	2.112E-05
Pu-240	Pu-240	4.950E-08	5.508E-37	5.631E-37	5.884E-37	6.863E-37	1.065E-36	4.962E-36	4.027E-34	9.679E-13
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	1.955E-05
Pu-240	U-236	1.000E+00	7.656E-35	2.338E-34	5.672E-34	1.955E-33	8.448E-33	1.118E-31	1.778E-29	1.548E-10
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	1.401E-44	1.359E-43	1.738E-42	8.172E-41	4.825E-38	1.079E-17
Pu-240	Ra-228+D	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	4.199E-16
Pu-240	Th-228+D	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	8.724E-17
Pu-240	ΣDSR (j)		1.262E-28	3.217E-27	6.802E-26	3.225E-24	8.720E-23	2.428E-21	8.822E-20	1.955E-05
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	6.914E-05
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	1.519E-04
U-234	Th-230	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	2.635E-08
U-234	Ra-226+D	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	9.741E-07
U-234	Pb-210+D	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	2.675E-07
U-234	ΣDSR (j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	1.532E-04
U-235+D	U-235+D	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.439E-04
U-235+D	Pa-231	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	1.193E-05
U-235+D	Ac-227+D	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	1.636E-06
U-235+D	ΣDSR (j)		1.098E-16	1.129E-16	1.234E-16	2.050E-16	8.279E-16	8.743E-15	2.263E-13	1.575E-04
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.413E-09
U-238+D	U-238+D	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.447E-04
U-238+D	U-234	9.999E-01	4.607E-32	1.406E-31	3.408E-31	1.171E-30	5.009E-30	6.405E-29	9.222E-27	4.315E-07
U-238+D	Th-230	9.999E-01	2.932E-36	2.086E-35	1.143E-34	1.166E-33	1.430E-32	5.771E-31	2.198E-28	3.561E-11
U-238+D	Ra-226+D	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	9.084E-10
U-238+D	Pb-210+D	9.999E-01	4.347E-33	1.347E-31	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	2.509E-10
U-238+D	ΣDSR (j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.451E-04

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Deep CSM- AF 300 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

June 21, 2011

Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	1.884E+05
Np-237	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	2.718E+01
Pu-239	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	1.183E+06
Pu-240	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	1.279E+06
Tc-99	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	3.616E+05
U-234	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	1.632E+05
U-235	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	1.587E+05
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	1.723E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	1.000E+03	1.327E-04	1.884E+05	4.625E-05	5.406E+05
Np-237	1.000E+00	595 ± 1	1.292E+00	1.935E+01	1.292E+00	1.935E+01
Pu-239	1.000E+00	1.000E+03	2.112E-05	1.183E+06	2.783E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	1.955E-05	1.279E+06	2.290E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	6.914E-05	3.616E+05	4.441E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	1.532E-04	1.632E+05	6.912E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	1.575E-04	1.587E+05	8.472E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	1.451E-04	1.723E+05	7.104E-10	*3.361E+05

*At specific activity limit

Summary : Hematite - Deep CSM- AF 300 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.560E-06
Np-237	Am-241	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	1.281E-04
Np-237	Np-237	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	9.196E-01
Np-237	ΣDOSE (j)		2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.408E-14	7.423E-14	6.867E-13	9.198E-01
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	7.796E-09
U-233	Np-237	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	1.084E-04
U-233	ΣDOSE (j)		3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.139E-23	2.665E-22	1.192E-20	1.084E-04
Th-229	Am-241	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	3.541E-12
Th-229	Np-237	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	6.879E-08
Th-229	ΣDOSE (j)		9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	6.880E-08
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	2.112E-05
U-235	Pu-239	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	5.322E-12
U-235	U-235	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.439E-04
U-235	ΣDOSE (j)		1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.439E-04
Pa-231	Pu-239	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	6.107E-12
Pa-231	U-235	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	1.193E-05
Pa-231	ΣDOSE (j)		8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	1.193E-05
Ac-227	Pu-239	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	8.113E-13
Ac-227	U-235	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	1.636E-06
Ac-227	ΣDOSE (j)		2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	1.636E-06
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.679E-13
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	1.955E-05
Pu-240	ΣDOSE (j)		1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	1.955E-05
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-29	1.548E-10
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.079E-17
Ra-228	Pu-240	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	4.199E-16
Th-228	Pu-240	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	8.724E-17
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	6.914E-05
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	1.519E-04
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	1.171E-30	5.009E-30	6.405E-29	9.222E-27	4.315E-07
U-234	ΣDOSE (j)		3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.793E-26	2.248E-25	1.083E-23	1.523E-04
Th-230	U-234	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	2.635E-08
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-28	3.561E-11
Th-230	ΣDOSE (j)		3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.239E-25	2.638E-08

Summary : Hematite - Deep CSM- AF 300 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	9.741E-07
Ra-226	U-238	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	9.084E-10
Ra-226	ΣDOSE(j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.007E-11	9.750E-07
Pb-210	U-234	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	2.675E-07
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	2.509E-10
Pb-210	ΣDOSE(j)		7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.052E-20	3.128E-18	2.678E-07
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.413E-09
U-238	U-238	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.447E-04
U-238	ΣDOSE(j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.447E-04

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM- AF 300 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.58 seconds

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Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Deep CSM- AF 3,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.526E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.415E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.768E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.998E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.572E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.179E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	7.100E+01	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.980E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Deep CSM- AF 3,000 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3000.00 square meters	Am-241	1.000E+00
Thickness:	5.20 meters	Np-237	1.000E+00
Cover Depth:	1.50 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TD_{DOSE}(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.821E-12	3.855E-12	3.923E-12	4.175E-12	5.004E-12	9.738E-12	7.401E-11	9.494E+00
M(t):	1.528E-13	1.542E-13	1.569E-13	1.670E-13	2.002E-13	3.895E-13	2.960E-12	3.798E-01

Maximum TDOSE(t): 1.333E+01 mrem/yr at t = 595 ± 1 years

Total Dose Contributions $TDOSE(i,p,t)$ for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.396E-04	0.0000	1.673E-05	0.0000	0.000E+00	0.0000	2.034E-05	0.0000	4.524E-07	0.0000	3.800E-08	0.0000	4.771E-04	0.0000
Np-237	1.228E+01	0.9212	4.675E-01	0.0351	0.000E+00	0.0000	5.684E-01	0.0426	1.264E-02	0.0009	1.062E-03	0.0001	1.333E+01	1.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.783E-16	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.290E-18	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.441E-23	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.912E-10	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.472E-12	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.104E-10	0.0000
Total	1.228E+01	0.9213	4.675E-01	0.0351	0.000E+00	0.0000	5.684E-01	0.0426	1.264E-02	0.0009	1.062E-03	0.0001	1.333E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.959E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.441E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.221E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	1.262E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.482E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	8.161E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.098E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.796E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.821E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.959E-21	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.221E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-28	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.482E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.161E-18	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.098E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.796E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.821E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.199E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.468E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.334E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.217E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.514E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.749E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.129E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.830E-12	0.9936	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.855E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.468E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.334E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E-27	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.749E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.830E-12	0.9936
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.855E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.858E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.524E-14	0.0064	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	8.565E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	6.802E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.579E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	3.082E-16	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.234E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	3.898E-12	0.9935	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.923E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.858E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-14	0.0064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.565E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.802E-26	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.082E-16	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.898E-12	0.9935
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.923E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.241E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.728E-14	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	9.423E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	3.225E-24	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.832E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.902E-15	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.050E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.145E-12	0.9927	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.175E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.241E-20	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.728E-14	0.0065
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.423E-20	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.225E-24	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-15	0.0007
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E-16	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.145E-12	0.9927
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.175E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.328E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	3.411E-14	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	1.238E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.720E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	2.799E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.835E-14	0.0057	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.279E-16	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	4.941E-12	0.9874	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.004E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.328E-19	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.411E-14	0.0068
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.238E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.720E-23	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-28	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.835E-14	0.0057
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.279E-16	0.0002
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E-12	0.9874
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.004E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.332E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.483E-14	0.0077	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	3.220E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	2.428E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	1.234E-27	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.151E-13	0.0529	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	8.743E-15	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	9.139E-12	0.9385	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.738E-12	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-18	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.483E-14	0.0077
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-19	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.428E-21	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-27	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-13	0.0529
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-15	0.0009
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.139E-12	0.9385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.738E-12	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3,000 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.045E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	7.113E-13	0.0096	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	4.957E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	8.822E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	8.550E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.006E-11	0.2711	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.263E-13	0.0031	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	5.301E-11	0.7163	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.401E-11	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.045E-17	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.113E-13	0.0096
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-18	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.822E-20	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.550E-26	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.006E-11	0.2711
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.263E-13	0.0031
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.301E-11	0.7163
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.401E-11	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep CSM- AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.795E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.538E-05	0.0000	1.186E-09	0.0000	1.247E-10	0.0000	0.000E+00	0.0000
Np-237	1.715E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.977E-04	0.0001	1.006E-06	0.0000	3.100E-08	0.0000	0.000E+00	0.0000
Pu-239	6.963E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.041E-05	0.0000	8.879E-09	0.0000	2.698E-10	0.0000	0.000E+00	0.0000
Pu-240	8.430E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.518E-05	0.0000	8.219E-09	0.0000	2.509E-10	0.0000	0.000E+00	0.0000
Tc-99	2.369E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-04	0.0000	2.873E-08	0.0000	8.908E-07	0.0000	0.000E+00	0.0000
U-234	3.849E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-05	0.0000	3.139E-08	0.0000	5.064E-08	0.0000	0.000E+00	0.0000
U-235	8.427E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.049E-05	0.0000	2.547E-08	0.0000	3.632E-08	0.0000	0.000E+00	0.0000
U-238	2.512E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-05	0.0000	2.528E-08	0.0000	3.582E-08	0.0000	0.000E+00	0.0000
Total	6.617E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.275E-03	0.0001	1.135E-06	0.0000	1.045E-06	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.218E-03	0.0001	4.635E-05	0.0000	0.000E+00	0.0000	5.635E-05	0.0000	1.254E-06	0.0000	1.056E-07	0.0000	1.337E-03	0.0001
Np-237	8.740E+00	0.9206	3.327E-01	0.0350	0.000E+00	0.0000	4.045E-01	0.0426	9.001E-03	0.0009	7.603E-04	0.0001	9.488E+00	0.9993
Pu-239	1.680E-12	0.0000	1.693E-14	0.0000	0.000E+00	0.0000	7.680E-14	0.0000	2.092E-15	0.0000	8.617E-15	0.0000	7.042E-05	0.0000
Pu-240	5.080E-11	0.0000	5.110E-13	0.0000	0.000E+00	0.0000	2.321E-12	0.0000	6.325E-14	0.0000	2.606E-13	0.0000	6.519E-05	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.311E-04	0.0000
U-234	1.435E-03	0.0002	1.454E-05	0.0000	0.000E+00	0.0000	6.583E-05	0.0000	1.851E-06	0.0000	7.399E-06	0.0000	1.545E-03	0.0002
U-235	1.360E-03	0.0001	1.378E-05	0.0000	0.000E+00	0.0000	6.237E-05	0.0000	1.754E-06	0.0000	7.010E-06	0.0000	1.505E-03	0.0002
U-238	1.371E-03	0.0001	1.389E-05	0.0000	0.000E+00	0.0000	6.287E-05	0.0000	1.768E-06	0.0000	7.067E-06	0.0000	1.472E-03	0.0002
Total	8.745E+00	0.9211	3.328E-01	0.0351	0.000E+00	0.0000	4.048E-01	0.0426	9.008E-03	0.0009	7.819E-04	0.0001	9.494E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.247E-37	3.347E-37	3.555E-37	4.389E-37	8.019E-37	6.609E-36	2.738E-33	1.520E-05
Am-241	Np-237+D	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	1.322E-03
Am-241	U-233	1.000E+00	3.714E-32	2.629E-31	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	8.084E-08
Am-241	Th-229+D	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	3.445E-11
Am-241	ΣDSR (j)		3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.328E-19	2.332E-18	6.045E-17	1.337E-03
Np-237+D	Np-237+D	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	9.487E+00
Np-237+D	U-233	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	1.124E-03
Np-237+D	Th-229+D	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	6.837E-07
Np-237+D	ΣDSR (j)		2.441E-14	2.468E-14	2.524E-14	2.728E-14	3.411E-14	7.483E-14	7.113E-13	9.488E+00
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.042E-05
Pu-239	U-235+D	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	1.900E-11
Pu-239	Pa-231	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-11
Pu-239	Ac-227+D	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.704E-12
Pu-239	ΣDSR (j)		8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.220E-19	4.957E-18	7.042E-05
Pu-240	Pu-240	4.950E-08	5.508E-37	5.631E-37	5.884E-37	6.863E-37	1.065E-36	4.962E-36	4.027E-34	3.227E-12
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-05
Pu-240	U-236	1.000E+00	7.656E-35	2.338E-34	5.672E-34	1.955E-33	8.448E-33	1.118E-31	1.778E-29	5.540E-10
Pu-240	Th-232	1.000E+00	0.000E+00	2.803E-45	1.401E-44	1.359E-43	1.738E-42	8.172E-41	4.825E-38	3.596E-17
Pu-240	Ra-228+D	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.398E-15
Pu-240	Th-228+D	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	1.008E-16
Pu-240	ΣDSR (j)		1.262E-28	3.217E-27	6.802E-26	3.225E-24	8.720E-23	2.428E-21	8.822E-20	6.519E-05
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.311E-04
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	1.541E-03
U-234	Th-230	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.793E-08
U-234	Ra-226+D	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.168E-06
U-234	Pb-210+D	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	8.932E-07
U-234	ΣDSR (j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	1.545E-03
U-235+D	U-235+D	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.460E-03
U-235+D	Pa-231	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.982E-05
U-235+D	Ac-227+D	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.456E-06
U-235+D	ΣDSR (j)		1.098E-16	1.129E-16	1.234E-16	2.050E-16	8.279E-16	8.743E-15	2.263E-13	1.505E-03
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.521E-08
U-238+D	U-238+D	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.468E-03
U-238+D	U-234	9.999E-01	4.607E-32	1.406E-31	3.408E-31	1.171E-30	5.009E-30	6.405E-29	9.222E-27	4.378E-06
U-238+D	Th-230	9.999E-01	2.932E-36	2.086E-35	1.143E-34	1.166E-33	1.430E-32	5.771E-31	2.198E-28	1.190E-10
U-238+D	Ra-226+D	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	2.955E-09
U-238+D	Pb-210+D	9.999E-01	4.347E-33	1.347E-31	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	8.987E-10
U-238+D	ΣDSR (j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.472E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)								
Am-241	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	*3.431E+12	1.870E+04
Np-237	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	*7.047E+08	2.635E+00
Pu-239	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	*6.214E+10	3.550E+05
Pu-240	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	*2.278E+11	3.835E+05
Tc-99	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10	1.082E+05
U-234	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	1.618E+04
U-235	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	1.661E+04
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	1.698E+04

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	1.000E+03	1.337E-03	1.870E+04	4.771E-04	5.240E+04
Np-237	1.000E+00	595 ± 1	1.333E+01	1.876E+00	1.333E+01	1.876E+00
Pu-239	1.000E+00	1.000E+03	7.042E-05	3.550E+05	2.783E-16	*6.214E+10
Pu-240	1.000E+00	1.000E+03	6.519E-05	3.835E+05	2.290E-18	*2.278E+11
Tc-99	1.000E+00	1.000E+03	2.311E-04	1.082E+05	4.441E-23	*1.697E+10
U-234	1.000E+00	1.000E+03	1.545E-03	1.618E+04	6.912E-10	*6.247E+09
U-235	1.000E+00	1.000E+03	1.505E-03	1.661E+04	8.472E-12	*2.161E+06
U-238	1.000E+00	1.000E+03	1.472E-03	1.698E+04	7.104E-10	*3.361E+05

*At specific activity limit

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.520E-05
Np-237	Am-241	1.000E+00	3.959E-21	1.199E-20	2.858E-20	9.241E-20	3.327E-19	2.326E-18	5.972E-17	1.322E-03
Np-237	Np-237	1.000E+00	2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.407E-14	7.423E-14	6.867E-13	9.487E+00
Np-237	ΣDOSE (j)		2.441E-14	2.468E-14	2.523E-14	2.728E-14	3.408E-14	7.423E-14	6.867E-13	9.488E+00
U-233	Am-241	1.000E+00	0.000E+00	0.000E+00	1.426E-30	1.398E-29	1.534E-28	4.191E-27	5.242E-25	8.084E-08
U-233	Np-237	1.000E+00	3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.138E-23	2.665E-22	1.192E-20	1.124E-03
U-233	ΣDOSE (j)		3.437E-25	1.044E-24	2.501E-24	8.245E-24	3.139E-23	2.665E-22	1.192E-20	1.124E-03
Th-229	Am-241	1.000E+00	7.420E-28	1.120E-26	1.325E-25	3.698E-24	1.047E-22	6.263E-21	7.302E-19	3.445E-11
Th-229	Np-237	1.000E+00	9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	6.837E-07
Th-229	ΣDOSE (j)		9.162E-21	6.455E-20	3.463E-19	3.267E-18	3.209E-17	5.947E-16	2.457E-14	6.838E-07
Pu-239	Pu-239	1.000E+00	8.221E-20	8.334E-20	8.565E-20	9.423E-20	1.238E-19	3.217E-19	4.925E-18	7.042E-05
U-235	Pu-239	1.000E+00	5.404E-26	1.641E-25	3.935E-25	1.300E-24	4.979E-24	4.317E-23	2.048E-21	1.900E-11
U-235	U-235	1.000E+00	1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.460E-03
U-235	ΣDOSE (j)		1.095E-16	1.110E-16	1.141E-16	1.255E-16	1.651E-16	4.306E-16	6.663E-15	1.460E-03
Pa-231	Pu-239	1.000E+00	2.652E-29	1.875E-28	1.014E-27	9.836E-27	1.047E-25	2.566E-24	2.352E-22	2.036E-11
Pa-231	U-235	1.000E+00	8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.982E-05
Pa-231	ΣDOSE (j)		8.071E-20	2.447E-19	5.840E-19	1.900E-18	6.959E-18	5.164E-17	1.571E-15	3.982E-05
Ac-227	Pu-239	1.000E+00	5.815E-29	8.736E-28	1.023E-26	2.750E-25	7.068E-24	3.292E-22	2.960E-20	2.704E-12
Ac-227	U-235	1.000E+00	2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.456E-06
Ac-227	ΣDOSE (j)		2.357E-19	1.649E-18	8.701E-18	7.754E-17	6.558E-16	8.261E-15	2.181E-13	5.456E-06
Pu-240	Pu-240	4.950E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.227E-12
Pu-240	Pu-240	1.000E+00	1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-05
Pu-240	ΣDOSE (j)		1.113E-29	1.138E-29	1.189E-29	1.386E-29	2.152E-29	1.002E-28	8.135E-27	6.518E-05
U-236	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-29	5.540E-10
Th-232	Pu-240	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.596E-17
Ra-228	Pu-240	1.000E+00	7.197E-30	1.060E-28	1.189E-27	2.778E-26	5.243E-25	1.437E-23	7.498E-22	1.398E-15
Th-228	Pu-240	1.000E+00	1.079E-28	3.100E-27	6.682E-26	3.198E-24	8.668E-23	2.414E-21	8.747E-20	1.008E-16
Tc-99	Tc-99	1.000E+00	1.482E-28	1.514E-28	1.579E-28	1.832E-28	2.799E-28	1.234E-27	8.550E-26	2.311E-04
U-234	U-234	1.000E+00	3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.792E-26	2.248E-25	1.082E-23	1.541E-03
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	1.171E-30	5.009E-30	6.405E-29	9.222E-27	4.378E-06
U-234	ΣDOSE (j)		3.240E-26	3.303E-26	3.433E-26	3.932E-26	5.793E-26	2.248E-25	1.083E-23	1.546E-03
Th-230	U-234	1.000E+00	3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.236E-25	8.793E-08
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.198E-28	1.190E-10
Th-230	ΣDOSE (j)		3.098E-30	9.451E-30	2.288E-29	7.829E-29	3.312E-28	4.071E-27	5.239E-25	8.805E-08

Summary : Hematite - Deep CSM- AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.006E-11	3.168E-06
Ra-226	U-238	9.999E-01	5.786E-24	8.733E-23	1.033E-21	2.884E-20	8.169E-19	4.886E-17	5.675E-15	2.955E-09
Ra-226	ΣDOSE(j)		8.161E-18	5.749E-17	3.082E-16	2.902E-15	2.835E-14	5.151E-13	2.007E-11	3.171E-06
Pb-210	U-234	1.000E+00	7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.051E-20	3.127E-18	8.932E-07
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	3.412E-30	2.721E-28	2.056E-26	3.224E-24	8.094E-22	8.987E-10
Pb-210	ΣDOSE(j)		7.637E-27	1.147E-25	1.341E-24	3.592E-23	9.117E-22	4.052E-20	3.128E-18	8.941E-07
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.521E-08
U-238	U-238	9.999E-01	3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.468E-03
U-238	ΣDOSE(j)		3.796E-12	3.830E-12	3.898E-12	4.145E-12	4.941E-12	9.139E-12	5.301E-11	1.468E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.516E-01	6.176E-01	2.006E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.681E-07	3.200E-06	9.367E-06	2.867E-05	6.745E-05	9.758E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.768E-01	4.309E-01
Np-237	ΣS(j):		1.000E+00	9.992E-01	9.975E-01	9.916E-01	9.751E-01	9.193E-01	7.769E-01	4.310E-01
U-233	Am-241	1.000E+00	0.000E+00	7.076E-13	6.357E-12	7.018E-11	6.201E-10	6.464E-09	4.857E-08	2.933E-07
U-233	Np-237	1.000E+00	0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
U-233	ΣS(j):		0.000E+00	4.371E-06	1.310E-05	4.348E-05	1.290E-04	4.131E-04	1.106E-03	2.498E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.007E-16	2.214E-14	5.892E-13	2.077E-11	4.877E-10	1.131E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.856E-09	2.056E-08	1.836E-07	1.982E-06	1.644E-05	1.383E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.995E-01	9.986E-01	9.954E-01	9.862E-01	9.546E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.832E-09	2.939E-08	9.681E-08	2.806E-07	8.312E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.374E-14	1.041E-12	9.342E-12	1.029E-10	9.031E-10	9.204E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.316E-04	2.081E-03	6.042E-03	1.798E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.022E-13	2.382E-12	5.781E-11	7.356E-10	8.669E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.936E-06	3.034E-05	2.250E-04	1.459E-03	5.430E-03	1.749E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.889E-08	4.770E-08	4.374E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.963E-01	9.877E-01	9.636E-01	8.836E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.875E-08	2.954E-07	8.825E-07	2.899E-06	8.337E-06	2.401E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.292E-17	6.544E-16	7.200E-15	6.301E-14	6.356E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.253E-19	2.224E-17	3.901E-16	6.111E-15	5.969E-14	6.258E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.128E-16	5.759E-15	5.859E-14	6.226E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.980E-01	9.939E-01	9.799E-01	9.409E-01	8.162E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.910E-01	9.704E-01	9.137E-01	7.402E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.497E-06	2.826E-05	8.428E-05	2.751E-04	7.774E-04	2.101E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01
Th-230	U-234	1.000E+00	0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.864E-04	2.579E-03	7.736E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.250E-07	1.081E-06	1.044E-05
Th-230	ΣS(j):		0.000E+00	9.001E-06	2.699E-05	8.988E-05	2.688E-04	8.865E-04	2.580E-03	7.747E-03

Summary : Hematite - Deep CSM- AF 3,000 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.629E-04	1.527E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.838E-12	4.936E-11	1.795E-09	4.601E-08	1.423E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.742E-06	1.902E-05	1.630E-04	1.528E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.324E-04	1.441E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.666E-12	8.372E-10	3.422E-08	1.302E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.327E-10	1.869E-08	4.361E-07	1.058E-05	1.325E-04	1.442E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.384E-05	5.352E-05	5.241E-05	4.938E-05	4.009E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.991E-01	9.970E-01	9.910E-01	9.706E-01	9.144E-01	7.423E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.991E-01	9.970E-01	9.911E-01	9.706E-01	9.145E-01	7.423E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.79 seconds

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Time = 0.000E+00	9
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Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Ra-226+C CSM

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.00 square meters	Pb-210	1.000E+00
Thickness:	5.20 meters	Ra-226	1.000E+00
Cover Depth:	1.50 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.184E-09	3.207E-09	3.254E-09	3.421E-09	3.949E-09	6.522E-09	2.736E-08	5.868E-06
M(t):	1.274E-10	1.283E-10	1.301E-10	1.368E-10	1.579E-10	2.609E-10	1.095E-09	2.347E-07

Maximum TDOSE(t): 5.868E-06 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.710E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	3.184E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.184E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.710E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.184E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.184E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.607E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	3.207E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.207E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.607E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.207E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.207E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.409E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	3.254E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.254E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.409E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.254E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.254E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.780E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	3.421E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.421E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.780E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.421E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.421E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.435E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	3.949E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.949E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.435E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.949E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.949E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.226E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	6.522E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.522E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.226E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.522E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.522E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.443E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.736E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.736E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.443E-19	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.736E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.736E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.480E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E-20	0.0000	6.079E-24	0.0000	7.002E-24	0.0000	0.000E+00	0.0000
Ra-226	4.144E-06	0.7062	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-06	0.2934	7.010E-10	0.0001	1.864E-09	0.0003	0.000E+00	0.0000
Total	4.144E-06	0.7062	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-06	0.2934	7.010E-10	0.0001	1.864E-09	0.0003	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.812E-20	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.868E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.868E-06	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	4.710E-16	4.607E-16	4.409E-16	3.780E-16	2.435E-16	5.226E-17	6.443E-19	1.812E-20
Ra-226+D	Ra-226+D	1.000E+00	3.184E-09	3.207E-09	3.254E-09	3.421E-09	3.949E-09	6.522E-09	2.736E-08	5.464E-06
Ra-226+D	Pb-210+D	1.000E+00	7.368E-18	2.198E-17	5.063E-17	1.456E-16	3.822E-16	1.103E-15	6.596E-15	4.045E-07
Ra-226+D	ΣDSR(j)		3.184E-09	3.207E-09	3.254E-09	3.421E-09	3.949E-09	6.522E-09	2.736E-08	5.868E-06

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	7.851E+09	7.795E+09	7.684E+09	7.308E+09	6.331E+09	3.833E+09	9.136E+08	4.260E+06	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	4.710E-16	*7.634E+13	1.812E-20	*7.634E+13
Ra-226	1.000E+00	1.000E+03	5.868E-06	4.260E+06	5.868E-06	4.260E+06

*At specific activity limit

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	4.710E-16	4.607E-16	4.409E-16	3.780E-16	2.435E-16	5.226E-17	6.443E-19	1.812E-20
Pb-210	Ra-226	1.000E+00	7.368E-18	2.198E-17	5.063E-17	1.456E-16	3.822E-16	1.103E-15	6.596E-15	4.045E-07
Pb-210	ΣDOSE(j)		4.784E-16	4.827E-16	4.915E-16	5.236E-16	6.257E-16	1.156E-15	6.597E-15	4.045E-07
Ra-226	Ra-226	1.000E+00	3.184E-09	3.207E-09	3.254E-09	3.421E-09	3.949E-09	6.522E-09	2.736E-08	5.464E-06

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.27 seconds

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Total Dose Components	
Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
Time = 1.000E+02	14
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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Ra-226+C CSM

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Pb-210	1.000E+00
Thickness:	5.20 meters	Ra-226	1.000E+00
Cover Depth:	1.50 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.147E-08	1.155E-08	1.172E-08	1.232E-08	1.422E-08	2.349E-08	9.852E-08	3.215E-05
M(t):	4.587E-10	4.620E-10	4.686E-10	4.927E-10	5.687E-10	9.394E-10	3.941E-09	1.286E-06

Maximum TDOSE(t): 3.215E-05 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.439E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.147E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.147E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.439E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.147E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.147E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.408E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.155E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.155E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.408E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.155E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.155E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.347E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.172E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.172E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.347E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.172E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.172E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.155E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.232E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.232E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.155E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.232E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.232E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.439E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.422E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.422E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.439E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.422E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.422E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.596E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.349E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.349E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.596E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.349E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.349E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.967E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	9.852E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.852E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.967E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.852E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.852E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.418E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E-19	0.0000	6.079E-23	0.0000	7.002E-23	0.0000	0.000E+00	0.0000
Ra-226	1.491E-05	0.4637	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-05	0.5355	7.010E-09	0.0002	1.864E-08	0.0006	0.000E+00	0.0000
Total	1.491E-05	0.4637	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-05	0.5355	7.010E-09	0.0002	1.864E-08	0.0006	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.812E-19	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.215E-05	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.215E-05	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.439E-15	1.408E-15	1.347E-15	1.155E-15	7.439E-16	1.596E-16	1.967E-18	1.812E-19
Ra-226+D	Ra-226+D	1.000E+00	1.147E-08	1.155E-08	1.172E-08	1.232E-08	1.422E-08	2.349E-08	9.852E-08	2.810E-05
Ra-226+D	Pb-210+D	1.000E+00	2.251E-17	6.714E-17	1.547E-16	4.447E-16	1.168E-15	3.370E-15	2.013E-14	4.045E-06
Ra-226+D	ΣDSR(j)		1.147E-08	1.155E-08	1.172E-08	1.232E-08	1.422E-08	2.349E-08	9.852E-08	3.215E-05

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	2.180E+09	2.165E+09	2.134E+09	2.029E+09	1.758E+09	1.065E+09	2.537E+08	7.776E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.439E-15	*7.634E+13	1.812E-19	*7.634E+13
Ra-226	1.000E+00	1.000E+03	3.215E-05	7.776E+05	3.215E-05	7.776E+05

*At specific activity limit

Summary : Hematite - Deep Ra-226+C CSM

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.439E-15	1.408E-15	1.347E-15	1.155E-15	7.439E-16	1.596E-16	1.967E-18	1.812E-19
Pb-210	Ra-226	1.000E+00	2.251E-17	6.714E-17	1.547E-16	4.447E-16	1.168E-15	3.370E-15	2.013E-14	4.045E-06
Pb-210	ΣDOSE(j)		1.461E-15	1.475E-15	1.502E-15	1.600E-15	1.912E-15	3.530E-15	2.014E-14	4.045E-06
Ra-226	Ra-226	1.000E+00	1.147E-08	1.155E-08	1.172E-08	1.232E-08	1.422E-08	2.349E-08	9.852E-08	2.810E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.50 seconds

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Total Dose Components	
Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
Time = 1.000E+02	14
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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Ra-226+C CSM

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Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 100.00 square meters	Pb-210 1.000E+00
Thickness: 5.20 meters	Ra-226 1.000E+00
Cover Depth: 1.50 meters	

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.887E-04
M(t):	5.012E-10	5.049E-10	5.121E-10	5.385E-10	6.215E-10	1.027E-09	4.307E-09	7.548E-06

Maximum TDOSE(t): 1.887E-04 mrem/yr at t = 1.000E+03 years

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.494E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.494E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.462E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.399E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.399E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.199E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.725E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.725E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.657E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.657E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.042E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.573E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E-18	0.0000	6.079E-22	0.0000	7.002E-22	0.0000	0.000E+00	0.0000
Ra-226	1.629E-05	0.0863	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-04	0.9123	7.010E-08	0.0004	1.864E-07	0.0010	0.000E+00	0.0000
Total	1.629E-05	0.0863	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-04	0.9123	7.010E-08	0.0004	1.864E-07	0.0010	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.812E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.887E-04	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.887E-04	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.812E-18
Ra-226+D	Ra-226+D	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.482E-04
Ra-226+D	Pb-210+D	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.045E-05
Ra-226+D	ΣDSR(j)		1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.887E-04

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	1.995E+09	1.981E+09	1.953E+09	1.857E+09	1.609E+09	9.740E+08	2.322E+08	1.325E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.494E-15	*7.634E+13	1.812E-18	*7.634E+13
Ra-226	1.000E+00	1.000E+03	1.887E-04	1.325E+05	1.887E-04	1.325E+05

*At specific activity limit

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.812E-18
Pb-210	Ra-226	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.045E-05
Pb-210	ΣDOSE(j)		1.517E-15	1.531E-15	1.559E-15	1.661E-15	1.985E-15	3.665E-15	2.091E-14	4.045E-05
Ra-226	Ra-226	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.482E-04

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.21 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSNI
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSNI
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 1000.00 square meters	Pb-210 1.000E+00
Thickness: 5.20 meters	Ra-226 1.000E+00
Cover Depth: 1.50 meters	

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.740E-03
M(t):	5.012E-10	5.049E-10	5.121E-10	5.385E-10	6.215E-10	1.027E-09	4.307E-09	6.961E-05

Maximum TDOSE(t): 1.740E-03 mrem/yr at t = 1.000E+03 years

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.494E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.494E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.462E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.399E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.399E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.199E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.725E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.725E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.657E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.657E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.042E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.573E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E-17	0.0000	6.079E-21	0.0000	7.002E-21	0.0000	0.000E+00	0.0000
Ra-226	1.629E-05	0.0094	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.9892	7.010E-07	0.0004	1.864E-06	0.0011	0.000E+00	0.0000
Total	1.629E-05	0.0094	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.9892	7.010E-07	0.0004	1.864E-06	0.0011	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.812E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.740E-03	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.740E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.812E-17
Ra-226+D	Ra-226+D	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.336E-03
Ra-226+D	Pb-210+D	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.045E-04
Ra-226+D	ΣDSR(j)		1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.740E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	1.995E+09	1.981E+09	1.953E+09	1.857E+09	1.609E+09	9.740E+08	2.322E+08	1.437E+04	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.494E-15	*7.634E+13	1.812E-17	*7.634E+13
Ra-226	1.000E+00	1.000E+03	1.740E-03	1.437E+04	1.740E-03	1.437E+04

*At specific activity limit

Summary : Hematite - Deep Ra-226+C CSM

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.812E-17
Pb-210	Ra-226	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.045E-04
Pb-210	ΣDOSE(j)		1.517E-15	1.531E-15	1.559E-15	1.661E-15	1.985E-15	3.665E-15	2.091E-14	4.045E-04
Ra-226	Ra-226	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.336E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.33 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Deep Ra-226+C CSM

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Appendix N

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 10000.00 square meters	Pb-210 1.000E+00
Thickness: 5.20 meters	Ra-226 1.000E+00
Cover Depth: 1.50 meters	

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.763E-03
M(t):	5.012E-10	5.049E-10	5.121E-10	5.385E-10	6.215E-10	1.027E-09	4.307E-09	7.054E-05

Maximum TDOSE(t): 1.763E-03 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.494E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.494E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.462E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.399E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.399E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.199E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.725E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.725E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.657E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.657E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.042E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.573E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E-17	0.0000	6.079E-20	0.0000	7.002E-20	0.0000	0.000E+00	0.0000
Ra-226	1.629E-05	0.0092	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.9762	7.010E-06	0.0040	1.864E-05	0.0106	0.000E+00	0.0000
Total	1.629E-05	0.0092	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.9762	7.010E-06	0.0040	1.864E-05	0.0106	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.824E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.763E-03	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.763E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.824E-17
Ra-226+D	Ra-226+D	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.356E-03
Ra-226+D	Pb-210+D	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.073E-04
Ra-226+D	ΣDSR(j)		1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.763E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	1.995E+09	1.981E+09	1.953E+09	1.857E+09	1.609E+09	9.740E+08	2.322E+08	1.418E+04	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.494E-15	*7.634E+13	1.824E-17	*7.634E+13
Ra-226	1.000E+00	1.000E+03	1.763E-03	1.418E+04	1.763E-03	1.418E+04

*At specific activity limit

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.824E-17
Pb-210	Ra-226	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.073E-04
Pb-210	ΣDOSE(j)		1.517E-15	1.531E-15	1.559E-15	1.661E-15	1.985E-15	3.665E-15	2.091E-14	4.073E-04
Ra-226	Ra-226	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.356E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.36 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Pb-210	1.000E+00
Thickness:	5.20 meters	Ra-226	1.000E+00
Cover Depth:	1.50 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.989E-09	6.032E-09	6.119E-09	6.434E-09	7.426E-09	1.227E-08	5.146E-08	1.296E-05
M(t):	2.395E-10	2.413E-10	2.448E-10	2.573E-10	2.970E-10	4.906E-10	2.058E-09	5.184E-07

Maximum TDOSE(t): 1.296E-05 mrem/yr at t = 1.000E+03 years

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.987E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	5.989E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.989E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.987E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.989E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.989E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.813E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	6.032E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.032E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.813E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.032E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.032E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.477E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	6.119E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.119E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.477E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.119E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.119E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.411E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	6.434E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.434E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.411E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.434E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.434E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.130E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	7.426E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.426E-09	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.130E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.426E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.426E-09	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	8.861E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.227E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.227E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.861E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.227E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.227E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.092E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	5.146E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.146E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.092E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.146E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.146E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.475E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.432E-20	0.0000	1.824E-23	0.0000	2.101E-23	0.0000	0.000E+00	0.0000
Ra-226	7.789E-06	0.6009	0.000E+00	0.0000	0.000E+00	0.0000	5.164E-06	0.3985	2.103E-09	0.0002	5.592E-09	0.0004	0.000E+00	0.0000
Total	7.789E-06	0.6009	0.000E+00	0.0000	0.000E+00	0.0000	5.164E-06	0.3985	2.103E-09	0.0002	5.592E-09	0.0004	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.436E-20	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.296E-05	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.296E-05	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	7.987E-16	7.813E-16	7.477E-16	6.411E-16	4.130E-16	8.861E-17	1.092E-18	5.436E-20
Ra-226+D	Ra-226+D	1.000E+00	5.989E-09	6.032E-09	6.119E-09	6.434E-09	7.426E-09	1.227E-08	5.146E-08	1.175E-05
Ra-226+D	Pb-210+D	1.000E+00	1.249E-17	3.727E-17	8.586E-17	2.468E-16	6.482E-16	1.871E-15	1.118E-14	1.214E-06
Ra-226+D	ΣDSR(j)		5.989E-09	6.032E-09	6.119E-09	6.434E-09	7.426E-09	1.227E-08	5.146E-08	1.296E-05

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	4.175E+09	4.145E+09	4.086E+09	3.886E+09	3.367E+09	2.038E+09	4.858E+08	1.929E+06	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	7.987E-16	*7.634E+13	5.436E-20	*7.634E+13
Ra-226	1.000E+00	1.000E+03	1.296E-05	1.929E+06	1.296E-05	1.929E+06

*At specific activity limit

Summary : Hematite - Deep Ra-226+C CSM

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	7.987E-16	7.813E-16	7.477E-16	6.411E-16	4.130E-16	8.861E-17	1.092E-18	5.436E-20
Pb-210	Ra-226	1.000E+00	1.249E-17	3.727E-17	8.586E-17	2.468E-16	6.482E-16	1.871E-15	1.118E-14	1.214E-06
Pb-210	ΣDOSE(j)		8.112E-16	8.186E-16	8.336E-16	8.879E-16	1.061E-15	1.959E-15	1.118E-14	1.214E-06
Ra-226	Ra-226	1.000E+00	5.989E-09	6.032E-09	6.119E-09	6.434E-09	7.426E-09	1.227E-08	5.146E-08	1.175E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.22 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Pb-210	1.000E+00
Thickness:	5.20 meters	Ra-226	1.000E+00
Cover Depth:	1.50 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.247E-08	1.256E-08	1.274E-08	1.340E-08	1.546E-08	2.554E-08	1.071E-07	6.793E-05
M(t):	4.988E-10	5.024E-10	5.096E-10	5.359E-10	6.185E-10	1.022E-09	4.286E-09	2.717E-06

Maximum TDOSE(t): 6.793E-05 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.494E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.247E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.247E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.494E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.247E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.247E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.462E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.256E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.256E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.256E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.256E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.399E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.274E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.274E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.399E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.274E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.274E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.199E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.340E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.340E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.340E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.340E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.725E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.546E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.546E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.725E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.546E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.546E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.657E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.657E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.554E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.554E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.042E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.071E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.071E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.071E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.071E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.573E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.432E-19	0.0000	1.824E-22	0.0000	2.101E-22	0.0000	0.000E+00	0.0000
Ra-226	1.621E-05	0.2386	0.000E+00	0.0000	0.000E+00	0.0000	5.164E-05	0.7602	2.103E-08	0.0003	5.592E-08	0.0008	0.000E+00	0.0000
Total	1.621E-05	0.2386	0.000E+00	0.0000	0.000E+00	0.0000	5.164E-05	0.7602	2.103E-08	0.0003	5.592E-08	0.0008	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.436E-19	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.793E-05	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.793E-05	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	5.436E-19
Ra-226+D	Ra-226+D	1.000E+00	1.247E-08	1.256E-08	1.274E-08	1.340E-08	1.546E-08	2.554E-08	1.071E-07	5.579E-05
Ra-226+D	Pb-210+D	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	1.214E-05
Ra-226+D	ΣDSR(j)		1.247E-08	1.256E-08	1.274E-08	1.340E-08	1.546E-08	2.554E-08	1.071E-07	6.793E-05

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	2.005E+09	1.991E+09	1.962E+09	1.866E+09	1.617E+09	9.788E+08	2.333E+08	3.680E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.494E-15	*7.634E+13	5.436E-19	*7.634E+13
Ra-226	1.000E+00	1.000E+03	6.793E-05	3.680E+05	6.793E-05	3.680E+05

*At specific activity limit

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	5.436E-19
Pb-210	Ra-226	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	1.214E-05
Pb-210	ΣDOSE(j)		1.517E-15	1.531E-15	1.559E-15	1.661E-15	1.985E-15	3.665E-15	2.091E-14	1.214E-05
Ra-226	Ra-226	1.000E+00	1.247E-08	1.256E-08	1.274E-08	1.340E-08	1.546E-08	2.554E-08	1.071E-07	5.579E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.28 seconds

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Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSNI
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSNI
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 300.00 square meters	Pb-210 1.000E+00
Thickness: 5.20 meters	Ra-226 1.000E+00
Cover Depth: 1.50 meters	

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	5.335E-04
M(t):	5.012E-10	5.049E-10	5.121E-10	5.385E-10	6.215E-10	1.027E-09	4.307E-09	2.134E-05

Maximum TDOSE(t): 5.335E-04 mrem/yr at t = 1.000E+03 years

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.494E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.494E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.462E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.399E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.399E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.199E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.725E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.725E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.657E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.657E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.042E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.573E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.432E-18	0.0000	1.824E-21	0.0000	2.101E-21	0.0000	0.000E+00	0.0000
Ra-226	1.629E-05	0.0305	0.000E+00	0.0000	0.000E+00	0.0000	5.164E-04	0.9680	2.103E-07	0.0004	5.592E-07	0.0010	0.000E+00	0.0000
Total	1.629E-05	0.0305	0.000E+00	0.0000	0.000E+00	0.0000	5.164E-04	0.9680	2.103E-07	0.0004	5.592E-07	0.0010	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.436E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.335E-04	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.335E-04	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	5.436E-18
Ra-226+D	Ra-226+D	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	4.121E-04
Ra-226+D	Pb-210+D	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	1.214E-04
Ra-226+D	ΣDSR(j)		1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	5.335E-04

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	1.995E+09	1.981E+09	1.953E+09	1.857E+09	1.609E+09	9.740E+08	2.322E+08	4.686E+04	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.494E-15	*7.634E+13	5.436E-18	*7.634E+13
Ra-226	1.000E+00	1.000E+03	5.335E-04	4.686E+04	5.335E-04	4.686E+04

*At specific activity limit

Summary : Hematite - Deep Ra-226+C CSM

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	5.436E-18
Pb-210	Ra-226	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	1.214E-04
Pb-210	ΣDOSE(j)		1.517E-15	1.531E-15	1.559E-15	1.661E-15	1.985E-15	3.665E-15	2.091E-14	1.214E-04
Ra-226	Ra-226	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	4.121E-04

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.23 seconds

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Time = 0.000E+00	9
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Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.857E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Deep Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Ra-226+C CSM

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Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 3000.00 square meters	Pb-210 1.000E+00
Thickness: 5.20 meters	Ra-226 1.000E+00
Cover Depth: 1.50 meters	

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.745E-03
M(t):	5.012E-10	5.049E-10	5.121E-10	5.385E-10	6.215E-10	1.027E-09	4.307E-09	6.982E-05

Maximum TDOSE(t): 1.745E-03 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.494E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.253E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.494E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.462E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.262E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.399E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.280E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.399E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.199E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.346E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.725E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.554E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.725E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.657E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.567E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.657E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.042E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.573E-25	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E-17	0.0000	1.824E-20	0.0000	2.101E-20	0.0000	0.000E+00	0.0000
Ra-226	1.629E-05	0.0093	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.9863	2.103E-06	0.0012	5.592E-06	0.0032	0.000E+00	0.0000
Total	1.629E-05	0.0093	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.9863	2.103E-06	0.0012	5.592E-06	0.0032	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.745E-03	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.745E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.815E-17
Ra-226+D	Ra-226+D	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.340E-03
Ra-226+D	Pb-210+D	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.051E-04
Ra-226+D	ΣDSR(j)		1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.745E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13	*7.634E+13
Ra-226	1.995E+09	1.981E+09	1.953E+09	1.857E+09	1.609E+09	9.740E+08	2.322E+08	1.432E+04	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.494E-15	*7.634E+13	1.815E-17	*7.634E+13
Ra-226	1.000E+00	1.000E+03	1.745E-03	1.432E+04	1.745E-03	1.432E+04

*At specific activity limit

Summary : Hematite - Deep Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP RA-226+C CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.494E-15	1.462E-15	1.399E-15	1.199E-15	7.725E-16	1.657E-16	2.042E-18	1.815E-17
Pb-210	Ra-226	1.000E+00	2.337E-17	6.971E-17	1.606E-16	4.618E-16	1.212E-15	3.499E-15	2.090E-14	4.051E-04
Pb-210	ΣDOSE(j)		1.517E-15	1.531E-15	1.559E-15	1.661E-15	1.985E-15	3.665E-15	2.091E-14	4.051E-04
Ra-226	Ra-226	1.000E+00	1.253E-08	1.262E-08	1.280E-08	1.346E-08	1.554E-08	2.567E-08	1.077E-07	1.340E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.931E-01	4.451E-02	8.815E-05	3.049E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.016E-01	9.247E-01	8.888E-01	6.553E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.998E-01	9.991E-01	9.947E-01	9.692E-01	8.889E-01	6.553E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.775E-01	6.469E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.51 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.038E-09	0.1594	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.205E-08	0.8338	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.417E-10	0.0068	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.043E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.038E-09	0.1594
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.205E-08	0.8338
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.417E-10	0.0068
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.043E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.924E-08	0.3792	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	2.945E-08	0.5804	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.052E-09	0.0404	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.075E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.924E-08	0.3792
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.945E-08	0.5804
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.052E-09	0.0404
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.075E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.879E-08	0.5600	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.445E-08	0.2812	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.164E-09	0.1588	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.140E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.879E-08	0.5600
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.445E-08	0.2812
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.164E-09	0.1588
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.140E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.089E-08	0.3887	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.197E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.167E-08	0.5891	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.376E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.089E-08	0.3887
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.197E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.167E-08	0.5891
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.376E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.312E-09	0.0378	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	9.692E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	5.879E-08	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.110E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.312E-09	0.0378
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.692E-13	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.879E-08	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.110E-08	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.835E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.466E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	9.565E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.565E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.835E-13	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.466E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.565E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.565E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.534E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.445E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.445E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.534E-23	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.445E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.445E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.129E-05	0.9314	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-06	0.0685	9.300E-10	0.0000	2.828E-09	0.0001	0.000E+00	0.0000
Total	3.129E-05	0.9314	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-06	0.0685	9.300E-10	0.0000	2.828E-09	0.0001	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.359E-05	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.359E-05	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	2.775E-10	2.481E-10	1.983E-10	9.044E-11	9.603E-12	3.746E-15	6.826E-25	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	7.761E-09	1.900E-08	2.859E-08	2.080E-08	2.303E-09	7.797E-13	9.466E-23	0.000E+00
Ra-228+D	ΣDSR(j)		8.038E-09	1.924E-08	2.879E-08	2.089E-08	2.312E-09	7.835E-13	9.534E-23	0.000E+00
Th-228+D	Th-228+D	1.000E+00	4.205E-08	2.945E-08	1.445E-08	1.197E-09	9.692E-13	1.466E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	7.896E-28	8.064E-28	8.412E-28	9.750E-28	1.487E-27	6.507E-27	4.419E-25	5.647E-08
Th-232	Ra-228+D	1.000E+00	1.709E-11	4.902E-11	1.039E-10	2.301E-10	3.697E-10	6.838E-10	3.684E-09	3.558E-06
Th-232	Th-228+D	1.000E+00	3.246E-10	2.003E-09	8.060E-09	3.144E-08	5.842E-08	9.497E-08	3.409E-07	2.998E-05
Th-232	ΣDSR(j)		3.417E-10	2.052E-09	8.164E-09	3.167E-08	5.879E-08	9.565E-08	3.445E-07	3.359E-05

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	3.110E+09	1.299E+09	8.685E+08	1.196E+09	1.081E+10	3.191E+13	*2.726E+14	*2.726E+14	
Th-228	5.946E+08	8.488E+08	1.730E+09	2.089E+10	2.579E+13	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.206 ± 0.008	2.986E-08	8.373E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	4.205E-08	5.946E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	3.359E-05	*1.097E+05	3.359E-05	*1.097E+05

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 1 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	2.775E-10	2.481E-10	1.983E-10	9.044E-11	9.603E-12	3.746E-15	6.826E-25	0.000E+00
Ra-228	Th-232	1.000E+00	1.709E-11	4.902E-11	1.039E-10	2.301E-10	3.697E-10	6.838E-10	3.684E-09	3.558E-06
Ra-228	ΣDOSE(j)		2.946E-10	2.971E-10	3.022E-10	3.205E-10	3.793E-10	6.838E-10	3.684E-09	3.558E-06
Th-228	Ra-228	1.000E+00	7.761E-09	1.900E-08	2.859E-08	2.080E-08	2.303E-09	7.797E-13	9.466E-23	0.000E+00
Th-228	Th-228	1.000E+00	4.205E-08	2.945E-08	1.445E-08	1.197E-09	9.692E-13	1.466E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	3.246E-10	2.003E-09	8.060E-09	3.144E-08	5.842E-08	9.497E-08	3.409E-07	2.998E-05
Th-228	ΣDOSE(j)		5.013E-08	5.045E-08	5.110E-08	5.344E-08	6.072E-08	9.497E-08	3.409E-07	2.998E-05
Th-232	Th-232	1.000E+00	7.896E-28	8.064E-28	8.412E-28	9.750E-28	1.487E-27	6.507E-27	4.419E-25	5.647E-08

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.61 seconds

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Time = 3.000E+00	11
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Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m²

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Ra-228	1.000E+00
Thickness:	5.20 meters	Th-228	1.000E+00
Cover Depth:	1.50 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.948E-07	1.961E-07	1.986E-07	2.077E-07	2.360E-07	3.695E-07	1.330E-06	1.431E-04
M(t):	7.793E-09	7.843E-09	7.944E-09	8.308E-09	9.442E-09	1.478E-08	5.320E-08	5.724E-06

Maximum TDOSE(t): 1.431E-04 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.091E-08	0.1587	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.626E-07	0.8346	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.311E-09	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.948E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.091E-08	0.1587
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.626E-07	0.8346
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.311E-09	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.948E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.426E-08	0.3788	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.139E-07	0.5809	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	7.903E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.961E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.426E-08	0.3788
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.139E-07	0.5809
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.903E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.961E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.112E-07	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.590E-08	0.2815	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.151E-08	0.1586	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.986E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E-07	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.590E-08	0.2815
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.151E-08	0.1586
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.986E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.075E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.627E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.223E-07	0.5889	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.077E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.075E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.627E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.223E-07	0.5889
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.077E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.935E-09	0.0379	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	3.748E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.271E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.360E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.935E-09	0.0379
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.748E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.271E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.360E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.027E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.668E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.695E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	3.695E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.027E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.668E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.695E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.695E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.682E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.330E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.330E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.682E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.330E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.330E-06	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.201E-04	0.8389	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-05	0.1609	9.300E-09	0.0001	2.828E-08	0.0002	0.000E+00	0.0000
Total	1.201E-04	0.8389	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-05	0.1609	9.300E-09	0.0001	2.828E-08	0.0002	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.431E-04	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.431E-04	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	8.964E-10	8.014E-10	6.404E-10	2.921E-10	3.101E-11	1.210E-14	2.202E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.001E-08	7.346E-08	1.106E-07	8.045E-08	8.904E-09	3.015E-12	3.660E-22	0.000E+00
Ra-228+D	ΣDSR(j)		3.091E-08	7.426E-08	1.112E-07	8.075E-08	8.935E-09	3.027E-12	3.682E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.626E-07	1.139E-07	5.590E-08	4.627E-09	3.748E-12	5.668E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.647E-07
Th-232	Ra-228+D	1.000E+00	5.520E-11	1.583E-10	3.356E-10	7.431E-10	1.194E-09	2.208E-09	1.189E-08	2.649E-05
Th-232	Th-228+D	1.000E+00	1.255E-09	7.745E-09	3.117E-08	1.216E-07	2.259E-07	3.672E-07	1.318E-06	1.161E-04
Th-232	ΣDSR(j)		1.311E-09	7.903E-09	3.151E-08	1.223E-07	2.271E-07	3.695E-07	1.330E-06	1.431E-04

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	8.088E+08	3.367E+08	2.248E+08	3.096E+08	2.798E+09	8.258E+12	*2.726E+14	*2.726E+14	
Th-228	1.538E+08	2.195E+08	4.473E+08	5.403E+09	6.670E+12	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.213 ± 0.008	1.154E-07	2.167E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	1.626E-07	1.538E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	1.431E-04	*1.097E+05	1.431E-04	*1.097E+05

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		8.964E-10	8.014E-10	6.404E-10	2.921E-10	3.101E-11	1.210E-14	2.202E-24 0.000E+00
Ra-228	Th-232	1.000E+00		5.520E-11	1.583E-10	3.356E-10	7.431E-10	1.194E-09	2.208E-09	1.189E-08 2.649E-05
Ra-228	ΣDOSE(j)			9.516E-10	9.597E-10	9.760E-10	1.035E-09	1.225E-09	2.208E-09	1.189E-08 2.649E-05
Th-228	Ra-228	1.000E+00		3.001E-08	7.346E-08	1.106E-07	8.045E-08	8.904E-09	3.015E-12	3.660E-22 0.000E+00
Th-228	Th-228	1.000E+00		1.626E-07	1.139E-07	5.590E-08	4.627E-09	3.748E-12	5.668E-23	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.255E-09	7.745E-09	3.117E-08	1.216E-07	2.259E-07	3.672E-07	1.318E-06 1.161E-04
Th-228	ΣDOSE(j)			1.939E-07	1.951E-07	1.976E-07	2.067E-07	2.348E-07	3.673E-07	1.318E-06 1.161E-04
Th-232	Th-232	1.000E+00		1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25 5.647E-07

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01 9.997E-01
Ra-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01 9.997E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.62 seconds

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Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Summary : Hematite - Deep Th-232+C CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Deep Th-232+C CSM - AF 100 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Deep Th-232+C CSM - AF 100 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 3.657E-04 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.482E-08	0.1584	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.835E-07	0.8349	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.475E-09	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.198E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.482E-08	0.1584
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.835E-07	0.8349
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.475E-09	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.198E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.375E-08	0.3786	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.286E-07	0.5811	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.907E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.212E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.375E-08	0.3786
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.286E-07	0.5811
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.907E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.212E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.254E-07	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.309E-08	0.2816	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.553E-08	0.1586	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.241E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E-07	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.309E-08	0.2816
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.553E-08	0.1586
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.241E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.111E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.223E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.380E-07	0.5889	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.343E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.111E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.223E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-07	0.5889
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.343E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.008E-08	0.0379	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.230E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.562E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.663E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.008E-08	0.0379
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.230E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.562E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.663E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.416E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.396E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.416E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.396E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.154E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.154E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.351E-04	0.3695	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-04	0.6294	9.300E-08	0.0003	2.828E-07	0.0008	0.000E+00	0.0000
Total	1.351E-04	0.3695	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-04	0.6294	9.300E-08	0.0003	2.828E-07	0.0008	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.657E-04	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.657E-04	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 100 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Ra-228+D	ΣDSR(j)		3.482E-08	8.375E-08	1.254E-07	9.111E-08	1.008E-08	3.416E-12	4.154E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.647E-06
Th-232	Ra-228+D	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.264E-04
Th-232	Th-228+D	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.337E-04
Th-232	ΣDSR(j)		1.475E-09	8.907E-09	3.553E-08	1.380E-07	2.562E-07	4.168E-07	1.500E-06	3.657E-04

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	7.180E+08	2.985E+08	1.993E+08	2.744E+08	2.480E+09	7.319E+12	*2.726E+14	*2.726E+14	
Th-228	1.362E+08	1.945E+08	3.963E+08	4.787E+09	5.910E+12	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	6.836E+04

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.209 ± 0.008	1.301E-07	1.921E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	1.835E-07	1.362E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	3.657E-04	6.836E+04	3.657E-04	6.836E+04

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 100 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228	Th-232	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.264E-04
Ra-228	ΣDOSE(j)		1.002E-09	1.011E-09	1.028E-09	1.090E-09	1.290E-09	2.326E-09	1.252E-08	2.264E-04
Th-228	Ra-228	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Th-228	Th-228	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.337E-04
Th-228	ΣDOSE(j)		2.188E-07	2.202E-07	2.230E-07	2.332E-07	2.650E-07	4.145E-07	1.488E-06	1.337E-04
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.647E-06

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.53 seconds

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Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 2.441E-03 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.482E-08	0.1584	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.835E-07	0.8349	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.475E-09	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.198E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.482E-08	0.1584
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.835E-07	0.8349
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.475E-09	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.198E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.375E-08	0.3786	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.286E-07	0.5811	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.907E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.212E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.375E-08	0.3786
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.286E-07	0.5811
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.907E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.212E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.254E-07	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.309E-08	0.2816	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.553E-08	0.1586	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.241E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E-07	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.309E-08	0.2816
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.553E-08	0.1586
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.241E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.111E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.223E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.380E-07	0.5889	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.343E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.111E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.223E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-07	0.5889
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.343E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.008E-08	0.0379	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.230E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.562E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.663E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.008E-08	0.0379
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.230E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.562E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.663E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.416E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.396E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.416E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.396E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.154E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.154E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.351E-04	0.0554	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.9431	9.300E-07	0.0004	2.828E-06	0.0012	0.000E+00	0.0000
Total	1.351E-04	0.0554	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.9431	9.300E-07	0.0004	2.828E-06	0.0012	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-03	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.441E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Ra-228+D	ΣDSR(j)		3.482E-08	8.375E-08	1.254E-07	9.111E-08	1.008E-08	3.416E-12	4.154E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.647E-05
Th-232	Ra-228+D	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.223E-03
Th-232	Th-228+D	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.617E-04
Th-232	ΣDSR(j)		1.475E-09	8.907E-09	3.553E-08	1.380E-07	2.562E-07	4.168E-07	1.500E-06	2.441E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	7.180E+08	2.985E+08	1.993E+08	2.744E+08	2.480E+09	7.319E+12	*2.726E+14	*2.726E+14	
Th-228	1.362E+08	1.945E+08	3.963E+08	4.787E+09	5.910E+12	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	1.024E+04

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.213 ± 0.008	1.301E-07	1.921E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	1.835E-07	1.362E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	2.441E-03	1.024E+04	2.441E-03	1.024E+04

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 1,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228	Th-232	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.223E-03
Ra-228	ΣDOSE(j)		1.002E-09	1.011E-09	1.028E-09	1.090E-09	1.290E-09	2.326E-09	1.252E-08	2.223E-03
Th-228	Ra-228	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Th-228	Th-228	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.617E-04
Th-228	ΣDOSE(j)		2.188E-07	2.202E-07	2.230E-07	2.332E-07	2.650E-07	4.145E-07	1.488E-06	1.617E-04
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.647E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.64 seconds

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Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 10000.00 square meters	Ra-228 1.000E+00
Thickness: 5.20 meters	Th-228 1.000E+00
Cover Depth: 1.50 meters	Th-232 1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.198E-07	2.212E-07	2.241E-07	2.343E-07	2.663E-07	4.168E-07	1.500E-06	2.475E-03
M(t):	8.792E-09	8.849E-09	8.963E-09	9.373E-09	1.065E-08	1.667E-08	6.001E-08	9.899E-05

Maximum TDOSE(t): 2.475E-03 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.482E-08	0.1584	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.835E-07	0.8349	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.475E-09	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.198E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.482E-08	0.1584
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.835E-07	0.8349
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.475E-09	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.198E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.375E-08	0.3786	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.286E-07	0.5811	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.907E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.212E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.375E-08	0.3786
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.286E-07	0.5811
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.907E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.212E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.254E-07	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.309E-08	0.2816	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.553E-08	0.1586	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.241E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E-07	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.309E-08	0.2816
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.553E-08	0.1586
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.241E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.111E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.223E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.380E-07	0.5889	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.343E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.111E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.223E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-07	0.5889
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.343E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.008E-08	0.0379	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.230E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.562E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.663E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.008E-08	0.0379
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.230E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.562E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.663E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.416E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.396E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.416E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.396E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.154E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.154E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.351E-04	0.0546	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.9302	9.300E-06	0.0038	2.828E-05	0.0114	0.000E+00	0.0000
Total	1.351E-04	0.0546	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.9302	9.300E-06	0.0038	2.828E-05	0.0114	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.475E-03	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.475E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Ra-228+D	ΣDSR(j)		3.482E-08	8.375E-08	1.254E-07	9.111E-08	1.008E-08	3.416E-12	4.154E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.650E-05
Th-232	Ra-228+D	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.256E-03
Th-232	Th-228+D	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.618E-04
Th-232	ΣDSR(j)		1.475E-09	8.907E-09	3.553E-08	1.380E-07	2.562E-07	4.168E-07	1.500E-06	2.475E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	7.180E+08	2.985E+08	1.993E+08	2.744E+08	2.480E+09	7.319E+12	*2.726E+14	*2.726E+14	
Th-228	1.362E+08	1.945E+08	3.963E+08	4.787E+09	5.910E+12	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	1.010E+04

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at t_{min} = time of minimum single radionuclide soil guideline
and at t_{max} = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	t _{min} (years)	DSR(i,t _{min})	G(i,t _{min}) (pCi/g)	DSR(i,t _{max})	G(i,t _{max}) (pCi/g)
Ra-228	1.000E+00	4.213 ± 0.008	1.301E-07	1.921E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	1.835E-07	1.362E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	2.475E-03	1.010E+04	2.475E-03	1.010E+04

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 10,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228	Th-232	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.256E-03
Ra-228	ΣDOSE(j)		1.002E-09	1.011E-09	1.028E-09	1.090E-09	1.290E-09	2.326E-09	1.252E-08	2.256E-03
Th-228	Ra-228	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Th-228	Th-228	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.618E-04
Th-228	ΣDOSE(j)		2.188E-07	2.202E-07	2.230E-07	2.332E-07	2.650E-07	4.145E-07	1.488E-06	1.618E-04
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.650E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.77 seconds

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Summary : Hematite - Deep Th-232+C CSM - AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Deep Th-232+C CSM - AF 3 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Deep Th-232+C CSM - AF 3 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 6.826E-05 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.578E-08	0.1589	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	8.286E-08	0.8343	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	6.698E-10	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.931E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.578E-08	0.1589
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.286E-08	0.8343
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.698E-10	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.931E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.787E-08	0.3789	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.805E-08	0.5808	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.033E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	9.995E-08	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.787E-08	0.3789
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.805E-08	0.5808
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.033E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.995E-08	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	5.669E-08	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	2.849E-08	0.2814	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.607E-08	0.1587	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.012E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.669E-08	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.849E-08	0.2814
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.607E-08	0.1587
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.012E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.116E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	2.358E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	6.236E-08	0.5890	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.059E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.116E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.358E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.236E-08	0.5890
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.059E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.555E-09	0.0378	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.910E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.158E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.203E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.555E-09	0.0378
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.910E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.158E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.203E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.543E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	2.888E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.884E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.884E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.888E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.884E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.884E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.877E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	6.782E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.782E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.877E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.782E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.782E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	6.134E-05	0.8987	0.000E+00	0.0000	0.000E+00	0.0000	6.906E-06	0.1012	2.790E-09	0.0000	8.483E-09	0.0001	0.000E+00	0.0000
Total	6.134E-05	0.8987	0.000E+00	0.0000	0.000E+00	0.0000	6.906E-06	0.1012	2.790E-09	0.0000	8.483E-09	0.0001	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.826E-05	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.826E-05	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3 m²

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	4.871E-10	4.354E-10	3.480E-10	1.587E-10	1.685E-11	6.573E-15	1.197E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.529E-08	3.744E-08	5.634E-08	4.100E-08	4.538E-09	1.537E-12	1.865E-22	0.000E+00
Ra-228+D	ΣDSR(j)		1.578E-08	3.787E-08	5.669E-08	4.116E-08	4.555E-09	1.543E-12	1.877E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	8.286E-08	5.805E-08	2.849E-08	2.358E-09	1.910E-12	2.888E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	9.839E-28	1.005E-27	1.048E-27	1.215E-27	1.852E-27	8.108E-27	5.506E-25	1.694E-07
Th-232	Ra-228+D	1.000E+00	2.999E-11	8.603E-11	1.824E-10	4.038E-10	6.488E-10	1.200E-09	6.461E-09	8.998E-06
Th-232	Th-228+D	1.000E+00	6.398E-10	3.947E-09	1.588E-08	6.196E-08	1.151E-07	1.872E-07	6.717E-07	5.909E-05
Th-232	ΣDSR(j)		6.698E-10	4.033E-09	1.607E-08	6.236E-08	1.158E-07	1.884E-07	6.782E-07	6.826E-05

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.584E+09	6.601E+08	4.410E+08	6.074E+08	5.489E+09	1.620E+13	*2.726E+14	*2.726E+14	
Th-228	3.017E+08	4.307E+08	8.776E+08	1.060E+10	1.309E+13	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.207 ± 0.008	5.880E-08	4.251E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	8.286E-08	3.017E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	6.826E-05	*1.097E+05	6.826E-05	*1.097E+05

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 3 m²

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	4.871E-10	4.354E-10	3.480E-10	1.587E-10	1.685E-11	6.573E-15	1.197E-24	0.000E+00
Ra-228	Th-232	1.000E+00	2.999E-11	8.603E-11	1.824E-10	4.038E-10	6.488E-10	1.200E-09	6.461E-09	8.998E-06
Ra-228	ΣDOSE(j)		5.171E-10	5.215E-10	5.303E-10	5.625E-10	6.656E-10	1.200E-09	6.461E-09	8.998E-06
Th-228	Ra-228	1.000E+00	1.529E-08	3.744E-08	5.634E-08	4.100E-08	4.538E-09	1.537E-12	1.865E-22	0.000E+00
Th-228	Th-228	1.000E+00	8.286E-08	5.805E-08	2.849E-08	2.358E-09	1.910E-12	2.888E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	6.398E-10	3.947E-09	1.588E-08	6.196E-08	1.151E-07	1.872E-07	6.717E-07	5.909E-05
Th-228	ΣDOSE(j)		9.880E-08	9.943E-08	1.007E-07	1.053E-07	1.197E-07	1.872E-07	6.717E-07	5.909E-05
Th-232	Th-232	1.000E+00	9.839E-28	1.005E-27	1.048E-27	1.215E-27	1.852E-27	8.108E-27	5.506E-25	1.694E-07

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.70 seconds

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Summary : Hematite - Deep Th-232+C CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Deep Th-232+C CSM - AF 30 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Deep Th-232+C CSM - AF 30 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Deep Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 2.029E-04 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.444E-08	0.1584	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.815E-07	0.8348	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.459E-09	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.174E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.444E-08	0.1584
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E-07	0.8348
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.459E-09	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.174E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.284E-08	0.3786	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.271E-07	0.5811	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.811E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.188E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.284E-08	0.3786
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.271E-07	0.5811
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.811E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.188E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.241E-07	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.239E-08	0.2815	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.514E-08	0.1586	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.216E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.241E-07	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.239E-08	0.2815
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.514E-08	0.1586
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.216E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 30 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.011E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.165E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.365E-07	0.5889	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.318E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.011E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.165E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.365E-07	0.5889
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.318E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.971E-09	0.0379	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.183E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.534E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.634E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.971E-09	0.0379
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.183E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.534E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.634E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.378E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.326E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.122E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.122E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.378E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.326E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.122E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.122E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.109E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.484E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.484E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.109E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.484E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.484E-06	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 30 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.337E-04	0.6590	0.000E+00	0.0000	0.000E+00	0.0000	6.906E-05	0.3404	2.790E-08	0.0001	8.483E-08	0.0004	0.000E+00	0.0000
Total	1.337E-04	0.6590	0.000E+00	0.0000	0.000E+00	0.0000	6.906E-05	0.3404	2.790E-08	0.0001	8.483E-08	0.0004	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.029E-04	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.029E-04	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 30 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.350E-08	8.199E-08	1.234E-07	8.980E-08	9.939E-09	3.366E-12	4.086E-22	0.000E+00
Ra-228+D	ΣDSR(j)		3.444E-08	8.284E-08	1.241E-07	9.011E-08	9.971E-09	3.378E-12	4.109E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.815E-07	1.271E-07	6.239E-08	5.165E-09	4.183E-12	6.326E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	1.694E-06
Th-232	Ra-228+D	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	7.108E-05
Th-232	Th-228+D	1.000E+00	1.401E-09	8.644E-09	3.479E-08	1.357E-07	2.522E-07	4.099E-07	1.471E-06	1.301E-04
Th-232	ΣDSR(j)		1.459E-09	8.811E-09	3.514E-08	1.365E-07	2.534E-07	4.122E-07	1.484E-06	2.029E-04

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	7.258E+08	3.018E+08	2.015E+08	2.774E+08	2.507E+09	7.400E+12	*2.726E+14	*2.726E+14	
Th-228	1.378E+08	1.966E+08	4.007E+08	4.840E+09	5.976E+12	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.209 ± 0.008	1.287E-07	1.942E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	1.815E-07	1.378E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	2.029E-04	*1.097E+05	2.029E-04	*1.097E+05

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 30 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228	Th-232	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	7.108E-05
Ra-228	ΣDOSE(j)		1.002E-09	1.011E-09	1.028E-09	1.090E-09	1.290E-09	2.326E-09	1.252E-08	7.108E-05
Th-228	Ra-228	1.000E+00	3.350E-08	8.199E-08	1.234E-07	8.980E-08	9.939E-09	3.366E-12	4.086E-22	0.000E+00
Th-228	Th-228	1.000E+00	1.815E-07	1.271E-07	6.239E-08	5.165E-09	4.183E-12	6.326E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.401E-09	8.644E-09	3.479E-08	1.357E-07	2.522E-07	4.099E-07	1.471E-06	1.301E-04
Th-228	ΣDOSE(j)		2.164E-07	2.178E-07	2.206E-07	2.307E-07	2.621E-07	4.099E-07	1.471E-06	1.301E-04
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	1.694E-06

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.78 seconds

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Time = 1.000E+00	10
Time = 3.000E+00	11
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Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Deep Th-232+C CSM - AF 300 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Deep Th-232+C CSM - AF 300 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	300.00 square meters	Ra-228	1.000E+00
Thickness:	5.20 meters	Th-228	1.000E+00
Cover Depth:	1.50 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.198E-07	2.212E-07	2.241E-07	2.343E-07	2.663E-07	4.168E-07	1.500E-06	8.269E-04
M(t):	8.792E-09	8.849E-09	8.963E-09	9.373E-09	1.065E-08	1.667E-08	6.001E-08	3.307E-05

Maximum TDOSE(t): 8.269E-04 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.482E-08	0.1584	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.835E-07	0.8349	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.475E-09	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.198E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.482E-08	0.1584
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.835E-07	0.8349
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.475E-09	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.198E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.375E-08	0.3786	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.286E-07	0.5811	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.907E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.212E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.375E-08	0.3786
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.286E-07	0.5811
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.907E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.212E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.254E-07	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.309E-08	0.2816	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.553E-08	0.1586	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.241E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E-07	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.309E-08	0.2816
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.553E-08	0.1586
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.241E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.111E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.223E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.380E-07	0.5889	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.343E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.111E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.223E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-07	0.5889
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.343E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.008E-08	0.0379	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.230E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.562E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.663E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.008E-08	0.0379
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.230E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.562E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.663E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.416E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.396E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.416E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.396E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.154E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.154E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.351E-04	0.1634	0.000E+00	0.0000	0.000E+00	0.0000	6.906E-04	0.8352	2.790E-07	0.0003	8.483E-07	0.0010	0.000E+00	0.0000
Total	1.351E-04	0.1634	0.000E+00	0.0000	0.000E+00	0.0000	6.906E-04	0.8352	2.790E-07	0.0003	8.483E-07	0.0010	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.269E-04	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.269E-04	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Ra-228+D	ΣDSR(j)		3.482E-08	8.375E-08	1.254E-07	9.111E-08	1.008E-08	3.416E-12	4.154E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	1.694E-05
Th-232	Ra-228+D	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	6.700E-04
Th-232	Th-228+D	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.399E-04
Th-232	ΣDSR(j)		1.475E-09	8.907E-09	3.553E-08	1.380E-07	2.562E-07	4.168E-07	1.500E-06	8.269E-04

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	7.180E+08	2.985E+08	1.993E+08	2.744E+08	2.480E+09	7.319E+12	*2.726E+14	*2.726E+14	
Th-228	1.362E+08	1.945E+08	3.963E+08	4.787E+09	5.910E+12	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	3.023E+04

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.213 ± 0.008	1.301E-07	1.921E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	1.835E-07	1.362E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	8.269E-04	3.023E+04	8.269E-04	3.023E+04

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 300 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228	Th-232	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	6.700E-04
Ra-228	ΣDOSE(j)		1.002E-09	1.011E-09	1.028E-09	1.090E-09	1.290E-09	2.326E-09	1.252E-08	6.700E-04
Th-228	Ra-228	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Th-228	Th-228	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.399E-04
Th-228	ΣDOSE(j)		2.188E-07	2.202E-07	2.230E-07	2.332E-07	2.650E-07	4.145E-07	1.488E-06	1.399E-04
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	1.694E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.37 seconds

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Time = 3.000E+00	11
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	5.200E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.332E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.144E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3000.00 square meters	Ra-228	1.000E+00
Thickness:	5.20 meters	Th-228	1.000E+00
Cover Depth:	1.50 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.198E-07	2.212E-07	2.241E-07	2.343E-07	2.663E-07	4.168E-07	1.500E-06	2.448E-03
M(t):	8.792E-09	8.849E-09	8.963E-09	9.373E-09	1.065E-08	1.667E-08	6.001E-08	9.794E-05

Maximum TDOSE(t): 2.448E-03 mrem/yr at t = 1.000E+03 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.482E-08	0.1584	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.835E-07	0.8349	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.475E-09	0.0067	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.198E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.482E-08	0.1584
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.835E-07	0.8349
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.475E-09	0.0067
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.198E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.375E-08	0.3786	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	1.286E-07	0.5811	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.907E-09	0.0403	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.212E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.375E-08	0.3786
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.286E-07	0.5811
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.907E-09	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.212E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.254E-07	0.5599	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.309E-08	0.2816	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.553E-08	0.1586	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.241E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E-07	0.5599
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.309E-08	0.2816
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.553E-08	0.1586
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.241E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.111E-08	0.3888	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	5.223E-09	0.0223	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.380E-07	0.5889	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.343E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.111E-08	0.3888
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.223E-09	0.0223
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-07	0.5889
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.343E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.008E-08	0.0379	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	4.230E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.562E-07	0.9621	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.663E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.008E-08	0.0379
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.230E-12	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.562E-07	0.9621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.663E-07	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.416E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	6.396E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	4.168E-07	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.416E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.396E-23	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.168E-07	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.154E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.500E-06	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.154E-22	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-06	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.351E-04	0.0552	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.9402	2.790E-06	0.0011	8.483E-06	0.0035	0.000E+00	0.0000
Total	1.351E-04	0.0552	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.9402	2.790E-06	0.0011	8.483E-06	0.0035	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.448E-03	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.448E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Ra-228+D	ΣDSR(j)		3.482E-08	8.375E-08	1.254E-07	9.111E-08	1.008E-08	3.416E-12	4.154E-22	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.648E-05
Th-232	Ra-228+D	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.230E-03
Th-232	Th-228+D	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.617E-04
Th-232	ΣDSR(j)		1.475E-09	8.907E-09	3.553E-08	1.380E-07	2.562E-07	4.168E-07	1.500E-06	2.448E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	7.180E+08	2.985E+08	1.993E+08	2.744E+08	2.480E+09	7.319E+12	*2.726E+14	*2.726E+14	
Th-228	1.362E+08	1.945E+08	3.963E+08	4.787E+09	5.910E+12	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	*1.097E+05	1.021E+04

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	4.213 ± 0.008	1.301E-07	1.921E+08	0.000E+00	*2.726E+14
Th-228	1.000E+00	0.000E+00	1.835E-07	1.362E+08	0.000E+00	*8.195E+14
Th-232	1.000E+00	1.000E+03	2.448E-03	1.021E+04	2.448E-03	1.021E+04

*At specific activity limit

Summary : Hematite - Deep Th-232+C CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - DEEP TH-232+C CSM.RAD

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	9.443E-10	8.441E-10	6.745E-10	3.077E-10	3.267E-11	1.274E-14	2.320E-24	0.000E+00
Ra-228	Th-232	1.000E+00	5.814E-11	1.668E-10	3.535E-10	7.827E-10	1.258E-09	2.326E-09	1.252E-08	2.230E-03
Ra-228	ΣDOSE(j)		1.002E-09	1.011E-09	1.028E-09	1.090E-09	1.290E-09	2.326E-09	1.252E-08	2.230E-03
Th-228	Ra-228	1.000E+00	3.387E-08	8.291E-08	1.248E-07	9.080E-08	1.005E-08	3.403E-12	4.131E-22	0.000E+00
Th-228	Th-228	1.000E+00	1.835E-07	1.286E-07	6.309E-08	5.223E-09	4.230E-12	6.396E-23	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.417E-09	8.741E-09	3.518E-08	1.372E-07	2.550E-07	4.145E-07	1.488E-06	1.617E-04
Th-228	ΣDOSE(j)		2.188E-07	2.202E-07	2.230E-07	2.332E-07	2.650E-07	4.145E-07	1.488E-06	1.617E-04
Th-232	Th-232	1.000E+00	1.364E-27	1.393E-27	1.453E-27	1.684E-27	2.567E-27	1.124E-26	7.631E-25	5.648E-05

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	9.999E-01	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.715E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	9.999E-01	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.67 seconds

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Time = 1.000E+00	16
Time = 3.000E+00	17
Time = 1.000E+01	18
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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Excavation Scenario - AF 1.7 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.700E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Excavation Scenario - AF 1.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.460E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.862E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Excavation Scenario - AF 1.7 m²

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Attachment 4 to HEM-11-91

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Excavation Scenario - AF 1.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.850E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.850E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.850E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 1.040E-01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.988E-03	0.0191	1.270E-03	0.0122	0.000E+00	0.0000	4.111E-04	0.0040	4.642E-07	0.0000	6.613E-08	0.0000	8.777E-05	0.0008
Np-237	4.463E-02	0.4291	1.542E-03	0.0148	0.000E+00	0.0000	1.002E-02	0.0963	1.691E-05	0.0002	5.532E-07	0.0000	1.070E-04	0.0010
Pu-239	1.259E-05	0.0001	1.228E-03	0.0118	0.000E+00	0.0000	4.001E-04	0.0038	9.035E-07	0.0000	3.186E-08	0.0000	8.543E-05	0.0008
Pu-240	7.792E-06	0.0001	1.228E-03	0.0118	0.000E+00	0.0000	4.000E-04	0.0038	9.035E-07	0.0000	3.186E-08	0.0000	8.542E-05	0.0008
Tc-99	5.356E-06	0.0001	2.380E-08	0.0000	0.000E+00	0.0000	1.529E-03	0.0147	8.914E-08	0.0000	2.424E-06	0.0000	3.521E-08	0.0000
U-234	1.815E-05	0.0002	3.777E-04	0.0036	0.000E+00	0.0000	1.183E-04	0.0011	1.005E-06	0.0000	1.625E-06	0.0000	6.828E-06	0.0001
U-235	3.154E-02	0.3032	3.520E-04	0.0034	0.000E+00	0.0000	1.119E-04	0.0011	9.492E-07	0.0000	1.535E-06	0.0000	6.453E-06	0.0001
U-238	5.953E-03	0.0572	3.377E-04	0.0032	0.000E+00	0.0000	1.123E-04	0.0011	9.540E-07	0.0000	1.543E-06	0.0000	6.483E-06	0.0001
Total	8.416E-02	0.8091	6.334E-03	0.0609	0.000E+00	0.0000	1.310E-02	0.1260	2.217E-05	0.0002	7.809E-06	0.0001	3.854E-04	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.757E-03	0.0361
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.632E-02	0.5415
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.727E-03	0.0166
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.722E-03	0.0166
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.537E-03	0.0148
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.236E-04	0.0050
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.201E-02	0.3078
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.412E-03	0.0616
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.040E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 1.7 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.985E-03	0.0191	1.268E-03	0.0122	0.000E+00	0.0000	4.101E-04	0.0040	4.634E-07	0.0000	6.602E-08	0.0000	8.763E-05	0.0008
Np-237	4.442E-02	0.4283	1.534E-03	0.0148	0.000E+00	0.0000	9.966E-03	0.0961	1.682E-05	0.0002	5.504E-07	0.0000	1.065E-04	0.0010
Pu-239	1.259E-05	0.0001	1.228E-03	0.0118	0.000E+00	0.0000	3.997E-04	0.0039	9.034E-07	0.0000	3.185E-08	0.0000	8.541E-05	0.0008
Pu-240	7.790E-06	0.0001	1.227E-03	0.0118	0.000E+00	0.0000	3.997E-04	0.0039	9.033E-07	0.0000	3.185E-08	0.0000	8.540E-05	0.0008
Tc-99	5.349E-06	0.0001	2.377E-08	0.0000	0.000E+00	0.0000	1.526E-03	0.0147	8.898E-08	0.0000	2.419E-06	0.0000	3.517E-08	0.0000
U-234	1.814E-05	0.0002	3.775E-04	0.0036	0.000E+00	0.0000	1.182E-04	0.0011	1.004E-06	0.0000	1.624E-06	0.0000	6.825E-06	0.0001
U-235	3.152E-02	0.3040	3.519E-04	0.0034	0.000E+00	0.0000	1.120E-04	0.0011	9.487E-07	0.0000	1.534E-06	0.0000	6.456E-06	0.0001
U-238	5.950E-03	0.0574	3.376E-04	0.0033	0.000E+00	0.0000	1.122E-04	0.0011	9.534E-07	0.0000	1.542E-06	0.0000	6.480E-06	0.0001
Total	8.392E-02	0.8092	6.324E-03	0.0610	0.000E+00	0.0000	1.304E-02	0.1258	2.209E-05	0.0002	7.800E-06	0.0001	3.847E-04	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.751E-03	0.0362
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.604E-02	0.5404
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.726E-03	0.0166
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-03	0.0166
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.534E-03	0.0148
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.233E-04	0.0050
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.200E-02	0.3085
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.409E-03	0.0618
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.037E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.979E-03	0.0192	1.264E-03	0.0123	0.000E+00	0.0000	4.083E-04	0.0040	4.619E-07	0.0000	6.580E-08	0.0000	8.735E-05	0.0008
Np-237	4.399E-02	0.4267	1.519E-03	0.0147	0.000E+00	0.0000	9.856E-03	0.0956	1.665E-05	0.0002	5.449E-07	0.0000	1.054E-04	0.0010
Pu-239	1.259E-05	0.0001	1.227E-03	0.0119	0.000E+00	0.0000	3.991E-04	0.0039	9.031E-07	0.0000	3.184E-08	0.0000	8.539E-05	0.0008
Pu-240	7.787E-06	0.0001	1.227E-03	0.0119	0.000E+00	0.0000	3.990E-04	0.0039	9.029E-07	0.0000	3.183E-08	0.0000	8.537E-05	0.0008
Tc-99	5.337E-06	0.0001	2.371E-08	0.0000	0.000E+00	0.0000	1.520E-03	0.0147	8.866E-08	0.0000	2.411E-06	0.0000	3.509E-08	0.0000
U-234	1.813E-05	0.0002	3.771E-04	0.0037	0.000E+00	0.0000	1.179E-04	0.0011	1.003E-06	0.0000	1.622E-06	0.0000	6.818E-06	0.0001
U-235	3.149E-02	0.3055	3.517E-04	0.0034	0.000E+00	0.0000	1.123E-04	0.0011	9.476E-07	0.0000	1.533E-06	0.0000	6.461E-06	0.0001
U-238	5.944E-03	0.0577	3.372E-04	0.0033	0.000E+00	0.0000	1.119E-04	0.0011	9.524E-07	0.0000	1.540E-06	0.0000	6.474E-06	0.0001
Total	8.345E-02	0.8095	6.303E-03	0.0611	0.000E+00	0.0000	1.293E-02	0.1254	2.191E-05	0.0002	7.780E-06	0.0001	3.833E-04	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.738E-03	0.0363
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.549E-02	0.5382
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.725E-03	0.0167
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.720E-03	0.0167
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.528E-03	0.0148
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.226E-04	0.0051
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.197E-02	0.3101
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.402E-03	0.0621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.031E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 1.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.957E-03	0.0194	1.249E-03	0.0124	0.000E+00	0.0000	4.018E-04	0.0040	4.567E-07	0.0000	6.506E-08	0.0000	8.637E-05	0.0009
Np-237	4.252E-02	0.4210	1.469E-03	0.0145	0.000E+00	0.0000	9.482E-03	0.0939	1.607E-05	0.0002	5.260E-07	0.0000	1.019E-04	0.0010
Pu-239	1.258E-05	0.0001	1.226E-03	0.0121	0.000E+00	0.0000	3.969E-04	0.0039	9.022E-07	0.0000	3.181E-08	0.0000	8.531E-05	0.0008
Pu-240	7.776E-06	0.0001	1.225E-03	0.0121	0.000E+00	0.0000	3.965E-04	0.0039	9.015E-07	0.0000	3.179E-08	0.0000	8.524E-05	0.0008
Tc-99	5.294E-06	0.0001	2.352E-08	0.0000	0.000E+00	0.0000	1.501E-03	0.0149	8.753E-08	0.0000	2.380E-06	0.0000	3.481E-08	0.0000
U-234	1.815E-05	0.0002	3.759E-04	0.0037	0.000E+00	0.0000	1.169E-04	0.0012	9.991E-07	0.0000	1.616E-06	0.0000	6.795E-06	0.0001
U-235	3.139E-02	0.3108	3.516E-04	0.0035	0.000E+00	0.0000	1.132E-04	0.0011	9.440E-07	0.0000	1.527E-06	0.0000	6.487E-06	0.0001
U-238	5.924E-03	0.0587	3.361E-04	0.0033	0.000E+00	0.0000	1.110E-04	0.0011	9.487E-07	0.0000	1.534E-06	0.0000	6.451E-06	0.0001
Total	8.183E-02	0.8103	6.233E-03	0.0617	0.000E+00	0.0000	1.252E-02	0.1240	2.131E-05	0.0002	7.712E-06	0.0001	3.786E-04	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.695E-03	0.0366
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.358E-02	0.5306
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.722E-03	0.0170
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.716E-03	0.0170
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.509E-03	0.0149
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.204E-04	0.0052
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.186E-02	0.3155
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.380E-03	0.0632
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.010E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 1.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.895E-03	0.0199	1.209E-03	0.0127	0.000E+00	0.0000	3.838E-04	0.0040	4.421E-07	0.0000	6.297E-08	0.0000	8.362E-05	0.0009
Np-237	3.858E-02	0.4046	1.332E-03	0.0140	0.000E+00	0.0000	8.488E-03	0.0890	1.451E-05	0.0002	4.755E-07	0.0000	9.246E-05	0.0010
Pu-239	1.255E-05	0.0001	1.223E-03	0.0128	0.000E+00	0.0000	3.905E-04	0.0041	8.995E-07	0.0000	3.172E-08	0.0000	8.509E-05	0.0009
Pu-240	7.744E-06	0.0001	1.220E-03	0.0128	0.000E+00	0.0000	3.896E-04	0.0041	8.974E-07	0.0000	3.165E-08	0.0000	8.489E-05	0.0009
Tc-99	5.173E-06	0.0001	2.298E-08	0.0000	0.000E+00	0.0000	1.447E-03	0.0152	8.438E-08	0.0000	2.294E-06	0.0000	3.401E-08	0.0000
U-234	1.865E-05	0.0002	3.723E-04	0.0039	0.000E+00	0.0000	1.143E-04	0.0012	9.880E-07	0.0000	1.598E-06	0.0000	6.730E-06	0.0001
U-235	3.110E-02	0.3261	3.535E-04	0.0037	0.000E+00	0.0000	1.158E-04	0.0012	9.337E-07	0.0000	1.511E-06	0.0000	6.601E-06	0.0001
U-238	5.865E-03	0.0615	3.327E-04	0.0035	0.000E+00	0.0000	1.085E-04	0.0011	9.382E-07	0.0000	1.518E-06	0.0000	6.388E-06	0.0001
Total	7.748E-02	0.8125	6.043E-03	0.0634	0.000E+00	0.0000	1.144E-02	0.1200	1.969E-05	0.0002	7.523E-06	0.0001	3.658E-04	0.0038

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.572E-03	0.0375
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.850E-02	0.5087
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.712E-03	0.0180
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.703E-03	0.0179
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.455E-03	0.0153
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.145E-04	0.0054
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.157E-02	0.3311
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.315E-03	0.0662
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.535E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 1.7 m²

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Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.692E-03	0.0214	1.080E-03	0.0136	0.000E+00	0.0000	3.265E-04	0.0041	3.945E-07	0.0000	5.618E-08	0.0000	7.466E-05	0.0009
Np-237	2.745E-02	0.3463	9.482E-04	0.0120	0.000E+00	0.0000	5.752E-03	0.0726	1.016E-05	0.0001	3.342E-07	0.0000	6.579E-05	0.0008
Pu-239	1.243E-05	0.0002	1.212E-03	0.0153	0.000E+00	0.0000	3.685E-04	0.0046	8.902E-07	0.0000	3.140E-08	0.0000	8.431E-05	0.0011
Pu-240	7.632E-06	0.0001	1.202E-03	0.0152	0.000E+00	0.0000	3.657E-04	0.0046	8.834E-07	0.0000	3.116E-08	0.0000	8.366E-05	0.0011
Tc-99	4.770E-06	0.0001	2.120E-08	0.0000	0.000E+00	0.0000	1.271E-03	0.0160	7.412E-08	0.0000	2.016E-06	0.0000	3.136E-08	0.0000
U-234	2.536E-05	0.0003	3.600E-04	0.0045	0.000E+00	0.0000	1.053E-04	0.0013	9.504E-07	0.0000	1.539E-06	0.0000	6.509E-06	0.0001
U-235	3.014E-02	0.3803	3.703E-04	0.0047	0.000E+00	0.0000	1.246E-04	0.0016	8.991E-07	0.0000	1.455E-06	0.0000	7.183E-06	0.0001
U-238	5.664E-03	0.0715	3.214E-04	0.0041	0.000E+00	0.0000	9.978E-05	0.0013	9.025E-07	0.0000	1.462E-06	0.0000	6.170E-06	0.0001
Total	6.500E-02	0.8201	5.494E-03	0.0693	0.000E+00	0.0000	8.413E-03	0.1062	1.515E-05	0.0002	6.925E-06	0.0001	3.283E-04	0.0041

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.174E-03	0.0400
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.422E-02	0.4318
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.678E-03	0.0212
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.660E-03	0.0209
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.278E-03	0.0161
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.997E-04	0.0063
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.065E-02	0.3867
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.094E-03	0.0769
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.925E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 1.7 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.225E-03	0.0231	7.814E-04	0.0147	0.000E+00	0.0000	2.027E-04	0.0038	2.848E-07	0.0000	4.055E-08	0.0000	5.402E-05	0.0010
Np-237	1.038E-02	0.1955	3.588E-04	0.0068	0.000E+00	0.0000	1.864E-03	0.0351	3.658E-06	0.0001	1.223E-07	0.0000	2.488E-05	0.0005
Pu-239	1.212E-05	0.0002	1.180E-03	0.0222	0.000E+00	0.0000	3.077E-04	0.0058	8.642E-07	0.0000	3.051E-08	0.0000	8.213E-05	0.0015
Pu-240	7.320E-06	0.0001	1.153E-03	0.0217	0.000E+00	0.0000	3.006E-04	0.0057	8.444E-07	0.0000	2.982E-08	0.0000	8.025E-05	0.0015
Tc-99	3.784E-06	0.0001	1.682E-08	0.0000	0.000E+00	0.0000	8.641E-04	0.0163	5.044E-08	0.0000	1.372E-06	0.0000	2.488E-08	0.0000
U-234	8.334E-05	0.0016	3.273E-04	0.0062	0.000E+00	0.0000	8.332E-05	0.0016	8.528E-07	0.0000	1.386E-06	0.0000	5.936E-06	0.0001
U-235	2.763E-02	0.5204	4.252E-04	0.0080	0.000E+00	0.0000	1.399E-04	0.0026	8.076E-07	0.0000	1.308E-06	0.0000	8.915E-06	0.0002
U-238	5.127E-03	0.0965	2.911E-04	0.0055	0.000E+00	0.0000	7.746E-05	0.0015	8.075E-07	0.0000	1.312E-06	0.0000	5.588E-06	0.0001
Total	4.447E-02	0.8374	4.518E-03	0.0851	0.000E+00	0.0000	3.840E-03	0.0723	8.170E-06	0.0002	5.601E-06	0.0001	2.618E-04	0.0049

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.264E-03	0.0426
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.263E-02	0.2379
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.583E-03	0.0298
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.542E-03	0.0290
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.693E-04	0.0164
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.022E-04	0.0095
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.821E-02	0.5312
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.503E-03	0.1036
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.311E-02	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.949E-04	0.0139	2.517E-04	0.0089	0.000E+00	0.0000	2.721E-05	0.0010	9.067E-08	0.0000	1.294E-08	0.0000	1.740E-05	0.0006
Np-237	3.288E-04	0.0116	1.248E-05	0.0004	0.000E+00	0.0000	2.585E-05	0.0009	1.010E-07	0.0000	4.420E-09	0.0000	8.366E-07	0.0000
Pu-239	1.059E-05	0.0004	1.077E-03	0.0380	0.000E+00	0.0000	1.169E-04	0.0041	7.789E-07	0.0000	2.758E-08	0.0000	7.494E-05	0.0026
Pu-240	6.282E-06	0.0002	9.969E-04	0.0352	0.000E+00	0.0000	1.082E-04	0.0038	7.210E-07	0.0000	2.556E-08	0.0000	6.937E-05	0.0024
Tc-99	1.633E-06	0.0001	7.478E-09	0.0000	0.000E+00	0.0000	1.600E-04	0.0056	9.408E-09	0.0000	2.565E-07	0.0000	1.107E-08	0.0000
U-234	5.562E-04	0.0196	2.356E-04	0.0083	0.000E+00	0.0000	3.078E-05	0.0011	6.013E-07	0.0000	9.916E-07	0.0000	4.512E-06	0.0002
U-235	1.956E-02	0.6899	5.695E-04	0.0201	0.000E+00	0.0000	9.473E-05	0.0033	5.561E-07	0.0000	9.020E-07	0.0000	1.350E-05	0.0005
U-238	3.365E-03	0.1187	2.059E-04	0.0073	0.000E+00	0.0000	2.282E-05	0.0008	5.467E-07	0.0000	8.973E-07	0.0000	3.952E-06	0.0001
Total	2.422E-02	0.8544	3.349E-03	0.1181	0.000E+00	0.0000	5.866E-04	0.0207	3.405E-06	0.0001	3.118E-06	0.0001	1.845E-04	0.0065

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.914E-04	0.0244
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.680E-04	0.0130
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.280E-03	0.0452
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.182E-03	0.0417
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.619E-04	0.0057
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.287E-04	0.0292
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-02	0.7139
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.599E-03	0.1270
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.835E-02	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.757E-03	3.751E-03	3.738E-03	3.694E-03	3.571E-03	3.173E-03	2.262E-03	6.905E-04
Am-241	Np-237+D	1.000E+00	9.031E-09	2.719E-08	6.315E-08	1.853E-07	5.036E-07	1.317E-06	2.082E-06	8.973E-07
Am-241	U-233	1.000E+00	1.471E-16	9.834E-16	5.069E-15	4.408E-14	3.526E-13	3.228E-12	1.818E-11	4.892E-11
Am-241	Th-229+D	1.000E+00	3.953E-19	5.910E-18	6.867E-17	1.798E-15	4.246E-14	1.345E-12	2.590E-11	3.376E-10
Am-241	ΣDSR (j)		3.757E-03	3.751E-03	3.738E-03	3.695E-03	3.572E-03	3.174E-03	2.264E-03	6.914E-04
Np-237+D	Np-237+D	1.000E+00	5.632E-02	5.604E-02	5.549E-02	5.358E-02	4.850E-02	3.422E-02	1.263E-02	3.642E-04
Np-237+D	U-233	1.000E+00	1.326E-09	3.835E-09	8.798E-09	2.573E-08	7.056E-08	1.920E-07	3.473E-07	2.949E-07
Np-237+D	Th-229+D	1.000E+00	4.877E-12	3.404E-11	1.792E-10	1.583E-09	1.287E-08	1.237E-07	8.016E-07	3.514E-06
Np-237+D	ΣDSR (j)		5.632E-02	5.604E-02	5.549E-02	5.358E-02	4.850E-02	3.422E-02	1.263E-02	3.680E-04
Pu-239	Pu-239	1.000E+00	1.727E-03	1.726E-03	1.725E-03	1.722E-03	1.712E-03	1.678E-03	1.583E-03	1.280E-03
Pu-239	U-235+D	1.000E+00	1.576E-11	4.728E-11	1.102E-10	3.300E-10	9.526E-10	3.070E-09	8.620E-09	2.203E-08
Pu-239	Pa-231	1.000E+00	7.942E-17	5.654E-16	3.008E-15	2.690E-14	2.245E-13	2.341E-12	1.856E-11	1.245E-10
Pu-239	Ac-227+D	1.000E+00	2.873E-18	4.242E-17	4.851E-16	1.214E-14	2.557E-13	5.943E-12	7.313E-11	7.516E-10
Pu-239	ΣDSR (j)		1.727E-03	1.726E-03	1.725E-03	1.722E-03	1.712E-03	1.678E-03	1.583E-03	1.280E-03
Pu-240	Pu-240	4.950E-08	8.523E-11	8.520E-11	8.514E-11	8.492E-11	8.431E-11	8.218E-11	7.635E-11	5.848E-11
Pu-240	Pu-240	1.000E+00	1.722E-03	1.721E-03	1.720E-03	1.716E-03	1.703E-03	1.660E-03	1.542E-03	1.182E-03
Pu-240	U-236	1.000E+00	7.170E-12	2.164E-11	5.056E-11	1.513E-10	4.352E-10	1.384E-09	3.737E-09	8.648E-09
Pu-240	Th-232	1.000E+00	1.258E-21	8.728E-21	4.594E-20	4.093E-19	3.430E-18	3.652E-17	3.090E-16	2.834E-15
Pu-240	Ra-228+D	1.000E+00	1.706E-21	2.503E-20	2.767E-19	6.094E-18	9.702E-17	1.462E-15	1.382E-14	1.210E-13
Pu-240	Th-228+D	1.000E+00	1.869E-22	5.333E-21	1.135E-19	5.191E-18	1.236E-16	2.187E-15	2.166E-14	1.923E-13
Pu-240	ΣDSR (j)		1.722E-03	1.721E-03	1.720E-03	1.716E-03	1.703E-03	1.660E-03	1.542E-03	1.182E-03
Tc-99	Tc-99	1.000E+00	1.537E-03	1.534E-03	1.528E-03	1.509E-03	1.455E-03	1.278E-03	8.693E-04	1.619E-04
U-234	U-234	1.000E+00	5.236E-04	5.233E-04	5.226E-04	5.202E-04	5.134E-04	4.905E-04	4.301E-04	2.692E-04
U-234	Th-230	1.000E+00	4.818E-09	1.436E-08	3.343E-08	9.997E-08	2.886E-07	9.315E-07	2.628E-06	7.170E-06
U-234	Ra-226+D	1.000E+00	2.809E-10	1.968E-09	1.040E-08	9.287E-08	7.779E-07	8.250E-06	6.899E-05	5.501E-04
U-234	Pb-210+D	1.000E+00	5.313E-14	5.400E-13	4.662E-12	9.458E-11	1.818E-09	3.937E-08	4.190E-07	2.207E-06
U-234	ΣDSR (j)		5.236E-04	5.233E-04	5.226E-04	5.204E-04	5.145E-04	4.997E-04	5.022E-04	8.287E-04
U-235+D	U-235+D	1.000E+00	3.201E-02	3.200E-02	3.196E-02	3.185E-02	3.154E-02	3.045E-02	2.755E-02	1.850E-02
U-235+D	Pa-231	1.000E+00	2.447E-07	7.428E-07	1.738E-06	5.201E-06	1.493E-05	4.705E-05	1.234E-04	2.401E-04
U-235+D	Ac-227+D	1.000E+00	1.161E-08	7.989E-08	4.122E-07	3.422E-06	2.372E-05	1.489E-04	5.367E-04	1.497E-03
U-235+D	ΣDSR (j)		3.201E-02	3.200E-02	3.197E-02	3.186E-02	3.157E-02	3.065E-02	2.821E-02	2.024E-02
U-238	U-238	5.400E-05	2.475E-08	2.474E-08	2.471E-08	2.459E-08	2.427E-08	2.319E-08	2.033E-08	1.271E-08
U-238+D	U-238+D	9.999E-01	6.412E-03	6.409E-03	6.402E-03	6.380E-03	6.315E-03	6.093E-03	5.503E-03	3.598E-03
U-238+D	U-234	9.999E-01	7.421E-10	2.225E-09	5.185E-09	1.548E-08	4.440E-08	1.398E-07	3.666E-07	7.646E-07
U-238+D	Th-230	9.999E-01	4.578E-15	3.176E-14	1.671E-13	1.488E-12	1.245E-11	1.316E-10	1.092E-09	9.349E-09
U-238+D	Ra-226+D	9.999E-01	1.989E-16	2.987E-15	3.486E-14	9.224E-13	2.239E-11	7.800E-10	1.932E-08	4.964E-07
U-238+D	Pb-210+D	9.999E-01	3.406E-20	7.129E-19	1.292E-17	7.451E-16	4.161E-14	3.141E-12	1.077E-10	1.935E-09
U-238+D	ΣDSR (j)		6.412E-03	6.409E-03	6.402E-03	6.380E-03	6.315E-03	6.094E-03	5.503E-03	3.599E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241	6.654E+03	6.665E+03	6.687E+03	6.767E+03	6.999E+03	7.877E+03	1.104E+04	3.616E+04	
Np-237	4.439E+02	4.461E+02	4.506E+02	4.665E+02	5.154E+02	7.305E+02	1.979E+03	6.793E+04	
Pu-239	1.448E+04	1.448E+04	1.449E+04	1.452E+04	1.460E+04	1.490E+04	1.579E+04	1.953E+04	
Pu-240	1.452E+04	1.452E+04	1.454E+04	1.457E+04	1.468E+04	1.506E+04	1.621E+04	2.116E+04	
Tc-99	1.627E+04	1.630E+04	1.636E+04	1.657E+04	1.719E+04	1.957E+04	2.876E+04	1.544E+05	
U-234	4.775E+04	4.778E+04	4.784E+04	4.804E+04	4.859E+04	5.003E+04	4.978E+04	3.017E+04	
U-235	7.810E+02	7.813E+02	7.821E+02	7.847E+02	7.918E+02	8.158E+02	8.862E+02	1.235E+03	
U-238	3.899E+03	3.901E+03	3.905E+03	3.919E+03	3.959E+03	4.103E+03	4.543E+03	6.946E+03	

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	0.000E+00	3.757E-03	6.654E+03	3.757E-03	6.654E+03
Np-237	1.000E+00	0.000E+00	5.632E-02	4.439E+02	5.632E-02	4.439E+02
Pu-239	1.000E+00	0.000E+00	1.727E-03	1.448E+04	1.727E-03	1.448E+04
Pu-240	1.000E+00	0.000E+00	1.722E-03	1.452E+04	1.722E-03	1.452E+04
Tc-99	1.000E+00	0.000E+00	1.537E-03	1.627E+04	1.537E-03	1.627E+04
U-234	1.000E+00	1.000E+03	8.287E-04	3.017E+04	5.236E-04	4.775E+04
U-235	1.000E+00	0.000E+00	3.201E-02	7.810E+02	3.201E-02	7.810E+02
U-238	1.000E+00	0.000E+00	6.412E-03	3.899E+03	6.412E-03	3.899E+03

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.757E-03	3.751E-03	3.738E-03	3.694E-03	3.571E-03	3.173E-03	2.262E-03	6.905E-04
Np-237	Am-241	1.000E+00	9.031E-09	2.719E-08	6.315E-08	1.853E-07	5.036E-07	1.317E-06	2.082E-06	8.973E-07
Np-237	Np-237	1.000E+00	5.632E-02	5.604E-02	5.549E-02	5.358E-02	4.850E-02	3.422E-02	1.263E-02	3.642E-04
Np-237	ΣDOSE (j)		5.632E-02	5.604E-02	5.549E-02	5.359E-02	4.850E-02	3.422E-02	1.263E-02	3.651E-04
U-233	Am-241	1.000E+00	1.471E-16	9.834E-16	5.069E-15	4.408E-14	3.526E-13	3.228E-12	1.818E-11	4.892E-11
U-233	Np-237	1.000E+00	1.326E-09	3.835E-09	8.798E-09	2.573E-08	7.056E-08	1.920E-07	3.473E-07	2.949E-07
U-233	ΣDOSE (j)		1.326E-09	3.835E-09	8.798E-09	2.573E-08	7.056E-08	1.920E-07	3.473E-07	2.949E-07
Th-229	Am-241	1.000E+00	3.953E-19	5.910E-18	6.867E-17	1.798E-15	4.246E-14	1.345E-12	2.590E-11	3.376E-10
Th-229	Np-237	1.000E+00	4.877E-12	3.404E-11	1.792E-10	1.583E-09	1.287E-08	1.237E-07	8.016E-07	3.514E-06
Th-229	ΣDOSE (j)		4.877E-12	3.404E-11	1.792E-10	1.583E-09	1.287E-08	1.237E-07	8.016E-07	3.514E-06
Pu-239	Pu-239	1.000E+00	1.727E-03	1.726E-03	1.725E-03	1.722E-03	1.712E-03	1.678E-03	1.583E-03	1.280E-03
U-235	Pu-239	1.000E+00	1.576E-11	4.728E-11	1.102E-10	3.300E-10	9.526E-10	3.070E-09	8.620E-09	2.203E-08
U-235	U-235	1.000E+00	3.201E-02	3.200E-02	3.196E-02	3.185E-02	3.154E-02	3.045E-02	2.755E-02	1.850E-02
U-235	ΣDOSE (j)		3.201E-02	3.200E-02	3.196E-02	3.185E-02	3.154E-02	3.045E-02	2.755E-02	1.850E-02
Pa-231	Pu-239	1.000E+00	7.942E-17	5.654E-16	3.008E-15	2.690E-14	2.245E-13	2.341E-12	1.856E-11	1.245E-10
Pa-231	U-235	1.000E+00	2.447E-07	7.428E-07	1.738E-06	5.201E-06	1.493E-05	4.705E-05	1.234E-04	2.401E-04
Pa-231	ΣDOSE (j)		2.447E-07	7.428E-07	1.738E-06	5.201E-06	1.493E-05	4.705E-05	1.234E-04	2.401E-04
Ac-227	Pu-239	1.000E+00	2.873E-18	4.242E-17	4.851E-16	1.214E-14	2.557E-13	5.943E-12	7.313E-11	7.516E-10
Ac-227	U-235	1.000E+00	1.161E-08	7.989E-08	4.122E-07	3.422E-06	2.372E-05	1.489E-04	5.367E-04	1.497E-03
Ac-227	ΣDOSE (j)		1.161E-08	7.989E-08	4.122E-07	3.422E-06	2.372E-05	1.489E-04	5.367E-04	1.497E-03
Pu-240	Pu-240	4.950E-08	8.523E-11	8.520E-11	8.514E-11	8.492E-11	8.431E-11	8.218E-11	7.635E-11	5.848E-11
Pu-240	Pu-240	1.000E+00	1.722E-03	1.721E-03	1.720E-03	1.716E-03	1.703E-03	1.660E-03	1.542E-03	1.182E-03
Pu-240	ΣDOSE (j)		1.722E-03	1.721E-03	1.720E-03	1.716E-03	1.703E-03	1.660E-03	1.542E-03	1.182E-03
U-236	Pu-240	1.000E+00	7.170E-12	2.164E-11	5.056E-11	1.513E-10	4.352E-10	1.384E-09	3.737E-09	8.648E-09
Th-232	Pu-240	1.000E+00	1.258E-21	8.728E-21	4.594E-20	4.093E-19	3.430E-18	3.652E-17	3.090E-16	2.834E-15
Ra-228	Pu-240	1.000E+00	1.706E-21	2.503E-20	2.767E-19	6.094E-18	9.702E-17	1.462E-15	1.382E-14	1.210E-13
Th-228	Pu-240	1.000E+00	1.869E-22	5.333E-21	1.135E-19	5.191E-18	1.236E-16	2.187E-15	2.166E-14	1.923E-13
Tc-99	Tc-99	1.000E+00	1.537E-03	1.534E-03	1.528E-03	1.509E-03	1.455E-03	1.278E-03	8.693E-04	1.619E-04
U-234	U-234	1.000E+00	5.236E-04	5.233E-04	5.226E-04	5.202E-04	5.134E-04	4.905E-04	4.301E-04	2.692E-04
U-234	U-238	9.999E-01	7.421E-10	2.225E-09	5.185E-09	1.548E-08	4.440E-08	1.398E-07	3.666E-07	7.646E-07
U-234	ΣDOSE (j)		5.236E-04	5.233E-04	5.226E-04	5.202E-04	5.135E-04	4.906E-04	4.305E-04	2.700E-04
Th-230	U-234	1.000E+00	4.818E-09	1.436E-08	3.343E-08	9.997E-08	2.886E-07	9.315E-07	2.628E-06	7.170E-06
Th-230	U-238	9.999E-01	4.578E-15	3.176E-14	1.671E-13	1.488E-12	1.245E-11	1.316E-10	1.092E-09	9.349E-09
Th-230	ΣDOSE (j)		4.818E-09	1.436E-08	3.343E-08	9.997E-08	2.886E-07	9.316E-07	2.629E-06	7.179E-06

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	2.809E-10	1.968E-09	1.040E-08	9.287E-08	7.779E-07	8.250E-06	6.899E-05	5.501E-04
Ra-226	U-238	9.999E-01	1.989E-16	2.987E-15	3.486E-14	9.224E-13	2.239E-11	7.800E-10	1.932E-08	4.964E-07
Ra-226	ΣDOSE(j)		2.809E-10	1.968E-09	1.040E-08	9.287E-08	7.780E-07	8.251E-06	6.901E-05	5.506E-04
Pb-210	U-234	1.000E+00	5.313E-14	5.400E-13	4.662E-12	9.458E-11	1.818E-09	3.937E-08	4.190E-07	2.207E-06
Pb-210	U-238	9.999E-01	3.406E-20	7.129E-19	1.292E-17	7.451E-16	4.161E-14	3.141E-12	1.077E-10	1.935E-09
Pb-210	ΣDOSE(j)		5.313E-14	5.400E-13	4.662E-12	9.458E-11	1.818E-09	3.937E-08	4.191E-07	2.209E-06
U-238	U-238	5.400E-05	2.475E-08	2.474E-08	2.471E-08	2.459E-08	2.427E-08	2.319E-08	2.033E-08	1.271E-08
U-238	U-238	9.999E-01	6.412E-03	6.409E-03	6.402E-03	6.380E-03	6.315E-03	6.093E-03	5.503E-03	3.598E-03
U-238	ΣDOSE(j)		6.412E-03	6.409E-03	6.402E-03	6.380E-03	6.315E-03	6.093E-03	5.503E-03	3.598E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.839E-01	9.526E-01	8.506E-01	6.154E-01	1.982E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.229E-07	9.623E-07	3.136E-06	8.820E-06	2.353E-05	3.823E-05	1.902E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.149E-01	2.325E-01	7.733E-03
Np-237	ΣS(j):		1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.150E-01	2.326E-01	7.752E-03
U-233	Am-241	1.000E+00	0.000E+00	7.066E-13	6.330E-12	6.920E-11	5.946E-10	5.635E-09	3.290E-08	9.937E-08
U-233	Np-237	1.000E+00	0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.992E-04
U-233	ΣS(j):		0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.993E-04
Th-229	Am-241	1.000E+00	0.000E+00	2.225E-17	5.987E-16	2.190E-14	5.710E-13	1.874E-11	3.647E-10	5.072E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Th-229	ΣS(j):		0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.961E-01	9.870E-01	9.615E-01	8.772E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.846E-10	2.952E-09	9.818E-09	2.927E-08	9.544E-08	2.690E-07	7.232E-07
U-235	U-235	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
U-235	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.370E-14	1.039E-12	9.310E-12	1.017E-10	8.731E-10	8.235E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.913E-15	1.021E-13	2.374E-12	5.715E-11	7.109E-10	7.753E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.940E-08	4.919E-08	4.848E-08	4.650E-08	4.020E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.959E-08	8.871E-08	2.950E-07	8.787E-07	2.858E-06	7.991E-06	2.087E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.300E-19	6.567E-18	7.285E-17	6.526E-16	7.132E-15	6.126E-14	5.797E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.251E-19	2.222E-17	3.892E-16	6.056E-15	5.806E-14	5.711E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.164E-17	3.121E-16	5.709E-15	5.701E-14	5.683E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.988E-01	9.965E-01	9.885E-01	9.659E-01	8.907E-01	7.066E-01	3.142E-01
U-234	U-234	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.851E-01	9.512E-01	8.605E-01	6.060E-01
U-234	U-238	9.999E-01	0.000E+00	2.833E-06	8.492E-06	2.821E-05	8.378E-05	2.697E-04	7.321E-04	1.720E-03
U-234	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.775E-04	2.503E-03	7.040E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.147E-10	1.272E-09	1.137E-08	1.234E-07	1.039E-06	9.175E-06
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.777E-04	2.504E-03	7.049E-03

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.595E-04	1.425E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.969E-14	1.836E-12	4.921E-11	1.777E-09	4.462E-08	1.286E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.596E-04	1.427E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.340E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.422E-17	1.137E-15	1.343E-13	9.632E-12	8.277E-10	3.312E-08	1.174E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.341E-03
U-238	U-238	5.400E-05	5.400E-05	5.397E-05	5.392E-05	5.373E-05	5.320E-05	5.138E-05	4.651E-05	3.282E-05
U-238	U-238	9.999E-01	9.999E-01	9.994E-01	9.985E-01	9.950E-01	9.851E-01	9.514E-01	8.612E-01	6.077E-01
U-238	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.01 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.670E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.460E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.862E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.835E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.835E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.835E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm ³)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 4.394E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.645E-03	0.0151	1.640E-03	0.0037	0.000E+00	0.0000	4.038E-03	0.0092	4.560E-06	0.0000	6.496E-07	0.0000	8.622E-04	0.0020
Np-237	1.585E-01	0.3607	1.992E-03	0.0045	0.000E+00	0.0000	9.844E-02	0.2240	1.661E-04	0.0004	5.434E-06	0.0000	1.051E-03	0.0024
Pu-239	4.394E-05	0.0001	1.586E-03	0.0036	0.000E+00	0.0000	3.930E-03	0.0089	8.876E-06	0.0000	3.129E-07	0.0000	8.392E-04	0.0019
Pu-240	2.507E-05	0.0001	1.586E-03	0.0036	0.000E+00	0.0000	3.930E-03	0.0089	8.876E-06	0.0000	3.129E-07	0.0000	8.392E-04	0.0019
Tc-99	1.872E-05	0.0000	3.074E-08	0.0000	0.000E+00	0.0000	1.502E-02	0.0342	8.757E-07	0.0000	2.381E-05	0.0001	3.459E-07	0.0000
U-234	6.182E-05	0.0001	4.879E-04	0.0011	0.000E+00	0.0000	1.162E-03	0.0026	9.870E-06	0.0000	1.596E-05	0.0000	6.708E-05	0.0002
U-235	1.118E-01	0.2543	4.547E-04	0.0010	0.000E+00	0.0000	1.099E-03	0.0025	9.324E-06	0.0000	1.508E-05	0.0000	6.339E-05	0.0001
U-238	2.139E-02	0.0487	4.363E-04	0.0010	0.000E+00	0.0000	1.104E-03	0.0025	9.371E-06	0.0000	1.516E-05	0.0000	6.369E-05	0.0001
Total	2.985E-01	0.6792	8.183E-03	0.0186	0.000E+00	0.0000	1.287E-01	0.2929	2.178E-04	0.0005	7.672E-05	0.0002	3.786E-03	0.0086

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.319E-02	0.0300
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.602E-01	0.5920
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.408E-03	0.0146
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.389E-03	0.0145
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.506E-02	0.0343
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.805E-03	0.0041
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.134E-01	0.2581
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-02	0.0524
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.394E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.634E-03	0.0151	1.638E-03	0.0037	0.000E+00	0.0000	4.029E-03	0.0092	4.553E-06	0.0000	6.485E-07	0.0000	8.609E-04	0.0020
Np-237	1.577E-01	0.3601	1.982E-03	0.0045	0.000E+00	0.0000	9.790E-02	0.2235	1.652E-04	0.0004	5.407E-06	0.0000	1.046E-03	0.0024
Pu-239	4.393E-05	0.0001	1.586E-03	0.0036	0.000E+00	0.0000	3.927E-03	0.0090	8.875E-06	0.0000	3.129E-07	0.0000	8.391E-04	0.0019
Pu-240	2.507E-05	0.0001	1.586E-03	0.0036	0.000E+00	0.0000	3.926E-03	0.0090	8.874E-06	0.0000	3.129E-07	0.0000	8.390E-04	0.0019
Tc-99	1.870E-05	0.0000	3.071E-08	0.0000	0.000E+00	0.0000	1.499E-02	0.0342	8.741E-07	0.0000	2.377E-05	0.0001	3.455E-07	0.0000
U-234	6.180E-05	0.0001	4.877E-04	0.0011	0.000E+00	0.0000	1.161E-03	0.0027	9.864E-06	0.0000	1.595E-05	0.0000	6.704E-05	0.0002
U-235	1.117E-01	0.2551	4.546E-04	0.0010	0.000E+00	0.0000	1.100E-03	0.0025	9.319E-06	0.0000	1.507E-05	0.0000	6.342E-05	0.0001
U-238	2.138E-02	0.0488	4.361E-04	0.0010	0.000E+00	0.0000	1.102E-03	0.0025	9.366E-06	0.0000	1.515E-05	0.0000	6.366E-05	0.0001
Total	2.976E-01	0.6795	8.169E-03	0.0187	0.000E+00	0.0000	1.281E-01	0.2926	2.170E-04	0.0005	7.662E-05	0.0002	3.779E-03	0.0086

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.317E-02	0.0301
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.588E-01	0.5910
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.405E-03	0.0146
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.385E-03	0.0146
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.503E-02	0.0343
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.803E-03	0.0041
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.134E-01	0.2588
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.300E-02	0.0525
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.380E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.613E-03	0.0152	1.632E-03	0.0038	0.000E+00	0.0000	4.011E-03	0.0092	4.538E-06	0.0000	6.464E-07	0.0000	8.581E-04	0.0020
Np-237	1.562E-01	0.3590	1.963E-03	0.0045	0.000E+00	0.0000	9.682E-02	0.2225	1.636E-04	0.0004	5.352E-06	0.0000	1.036E-03	0.0024
Pu-239	4.392E-05	0.0001	1.585E-03	0.0036	0.000E+00	0.0000	3.921E-03	0.0090	8.872E-06	0.0000	3.128E-07	0.0000	8.389E-04	0.0019
Pu-240	2.506E-05	0.0001	1.585E-03	0.0036	0.000E+00	0.0000	3.920E-03	0.0090	8.870E-06	0.0000	3.127E-07	0.0000	8.386E-04	0.0019
Tc-99	1.866E-05	0.0000	3.064E-08	0.0000	0.000E+00	0.0000	1.494E-02	0.0343	8.709E-07	0.0000	2.368E-05	0.0001	3.447E-07	0.0000
U-234	6.177E-05	0.0001	4.872E-04	0.0011	0.000E+00	0.0000	1.158E-03	0.0027	9.853E-06	0.0000	1.594E-05	0.0000	6.698E-05	0.0002
U-235	1.116E-01	0.2565	4.544E-04	0.0010	0.000E+00	0.0000	1.103E-03	0.0025	9.309E-06	0.0000	1.506E-05	0.0000	6.347E-05	0.0001
U-238	2.136E-02	0.0491	4.356E-04	0.0010	0.000E+00	0.0000	1.100E-03	0.0025	9.356E-06	0.0000	1.513E-05	0.0000	6.359E-05	0.0001
Total	2.959E-01	0.6801	8.143E-03	0.0187	0.000E+00	0.0000	1.270E-01	0.2918	2.152E-04	0.0005	7.643E-05	0.0002	3.766E-03	0.0087

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.312E-02	0.0302
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.562E-01	0.5888
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.398E-03	0.0147
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.377E-03	0.0147
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.498E-02	0.0344
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.800E-03	0.0041
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.132E-01	0.2603
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.298E-02	0.0528
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.351E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.539E-03	0.0154	1.614E-03	0.0038	0.000E+00	0.0000	3.947E-03	0.0093	4.487E-06	0.0000	6.391E-07	0.0000	8.484E-04	0.0020
Np-237	1.510E-01	0.3551	1.897E-03	0.0045	0.000E+00	0.0000	9.315E-02	0.2191	1.578E-04	0.0004	5.167E-06	0.0000	1.001E-03	0.0024
Pu-239	4.388E-05	0.0001	1.584E-03	0.0037	0.000E+00	0.0000	3.899E-03	0.0092	8.863E-06	0.0000	3.125E-07	0.0000	8.381E-04	0.0020
Pu-240	2.502E-05	0.0001	1.583E-03	0.0037	0.000E+00	0.0000	3.896E-03	0.0092	8.856E-06	0.0000	3.122E-07	0.0000	8.374E-04	0.0020
Tc-99	1.851E-05	0.0000	3.039E-08	0.0000	0.000E+00	0.0000	1.475E-02	0.0347	8.599E-07	0.0000	2.338E-05	0.0001	3.419E-07	0.0000
U-234	6.186E-05	0.0001	4.856E-04	0.0011	0.000E+00	0.0000	1.149E-03	0.0027	9.815E-06	0.0000	1.587E-05	0.0000	6.675E-05	0.0002
U-235	1.112E-01	0.2616	4.543E-04	0.0011	0.000E+00	0.0000	1.112E-03	0.0026	9.273E-06	0.0000	1.500E-05	0.0000	6.372E-05	0.0001
U-238	2.128E-02	0.0501	4.341E-04	0.0010	0.000E+00	0.0000	1.091E-03	0.0026	9.319E-06	0.0000	1.507E-05	0.0000	6.337E-05	0.0001
Total	2.902E-01	0.6824	8.052E-03	0.0189	0.000E+00	0.0000	1.230E-01	0.2892	2.093E-04	0.0005	7.576E-05	0.0002	3.719E-03	0.0087

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.295E-02	0.0305
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.472E-01	0.5813
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.374E-03	0.0150
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.350E-03	0.0149
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.479E-02	0.0348
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.789E-03	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E-01	0.2655
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.290E-02	0.0538
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.252E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.332E-03	0.0159	1.563E-03	0.0039	0.000E+00	0.0000	3.771E-03	0.0095	4.343E-06	0.0000	6.186E-07	0.0000	8.214E-04	0.0021
Np-237	1.370E-01	0.3435	1.721E-03	0.0043	0.000E+00	0.0000	8.338E-02	0.2091	1.425E-04	0.0004	4.672E-06	0.0000	9.083E-04	0.0023
Pu-239	4.377E-05	0.0001	1.580E-03	0.0040	0.000E+00	0.0000	3.836E-03	0.0096	8.837E-06	0.0000	3.116E-07	0.0000	8.359E-04	0.0021
Pu-240	2.491E-05	0.0001	1.576E-03	0.0040	0.000E+00	0.0000	3.827E-03	0.0096	8.816E-06	0.0000	3.109E-07	0.0000	8.339E-04	0.0021
Tc-99	1.808E-05	0.0000	2.969E-08	0.0000	0.000E+00	0.0000	1.421E-02	0.0356	8.289E-07	0.0000	2.254E-05	0.0001	3.341E-07	0.0000
U-234	6.373E-05	0.0002	4.810E-04	0.0012	0.000E+00	0.0000	1.122E-03	0.0028	9.706E-06	0.0000	1.570E-05	0.0000	6.611E-05	0.0002
U-235	1.102E-01	0.2763	4.567E-04	0.0011	0.000E+00	0.0000	1.138E-03	0.0029	9.172E-06	0.0000	1.484E-05	0.0000	6.484E-05	0.0002
U-238	2.107E-02	0.0528	4.299E-04	0.0011	0.000E+00	0.0000	1.066E-03	0.0027	9.217E-06	0.0000	1.491E-05	0.0000	6.275E-05	0.0002
Total	2.747E-01	0.6890	7.807E-03	0.0196	0.000E+00	0.0000	1.124E-01	0.2818	1.935E-04	0.0005	7.391E-05	0.0002	3.594E-03	0.0090

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.249E-02	0.0313
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.231E-01	0.5596
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.305E-03	0.0158
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.271E-03	0.0157
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.426E-02	0.0358
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.759E-03	0.0044
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.119E-01	0.2806
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.265E-02	0.0568
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.988E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.656E-03	0.0175	1.395E-03	0.0043	0.000E+00	0.0000	3.208E-03	0.0099	3.876E-06	0.0000	5.519E-07	0.0000	7.334E-04	0.0023
Np-237	9.747E-02	0.3012	1.225E-03	0.0038	0.000E+00	0.0000	5.650E-02	0.1746	9.976E-05	0.0003	3.283E-06	0.0000	6.463E-04	0.0020
Pu-239	4.338E-05	0.0001	1.565E-03	0.0048	0.000E+00	0.0000	3.620E-03	0.0112	8.745E-06	0.0000	3.085E-07	0.0000	8.283E-04	0.0026
Pu-240	2.455E-05	0.0001	1.553E-03	0.0048	0.000E+00	0.0000	3.592E-03	0.0111	8.678E-06	0.0000	3.061E-07	0.0000	8.219E-04	0.0025
Tc-99	1.668E-05	0.0001	2.738E-08	0.0000	0.000E+00	0.0000	1.248E-02	0.0386	7.282E-07	0.0000	1.980E-05	0.0001	3.081E-07	0.0000
U-234	8.851E-05	0.0003	4.651E-04	0.0014	0.000E+00	0.0000	1.034E-03	0.0032	9.336E-06	0.0000	1.512E-05	0.0000	6.394E-05	0.0002
U-235	1.068E-01	0.3300	4.784E-04	0.0015	0.000E+00	0.0000	1.224E-03	0.0038	8.832E-06	0.0000	1.430E-05	0.0000	7.056E-05	0.0002
U-238	2.035E-02	0.0629	4.152E-04	0.0013	0.000E+00	0.0000	9.802E-04	0.0030	8.865E-06	0.0000	1.436E-05	0.0000	6.061E-05	0.0002
Total	2.305E-01	0.7121	7.098E-03	0.0219	0.000E+00	0.0000	8.264E-02	0.2553	1.488E-04	0.0005	6.802E-05	0.0002	3.225E-03	0.0100

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.100E-02	0.0340
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.559E-01	0.4818
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.066E-03	0.0187
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.001E-03	0.0185
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.252E-02	0.0387
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.677E-03	0.0052
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.086E-01	0.3356
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.183E-02	0.0674
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.236E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 16.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.095E-03	0.0201	1.009E-03	0.0049	0.000E+00	0.0000	1.991E-03	0.0098	2.797E-06	0.0000	3.984E-07	0.0000	5.307E-04	0.0026
Np-237	3.686E-02	0.1807	4.636E-04	0.0023	0.000E+00	0.0000	1.831E-02	0.0898	3.594E-05	0.0002	1.202E-06	0.0000	2.444E-04	0.0012
Pu-239	4.228E-05	0.0002	1.525E-03	0.0075	0.000E+00	0.0000	3.023E-03	0.0148	8.490E-06	0.0000	2.997E-07	0.0000	8.069E-04	0.0040
Pu-240	2.355E-05	0.0001	1.490E-03	0.0073	0.000E+00	0.0000	2.953E-03	0.0145	8.295E-06	0.0000	2.930E-07	0.0000	7.883E-04	0.0039
Tc-99	1.323E-05	0.0001	2.172E-08	0.0000	0.000E+00	0.0000	8.489E-03	0.0416	4.955E-07	0.0000	1.348E-05	0.0001	2.444E-07	0.0000
U-234	3.016E-04	0.0015	4.229E-04	0.0021	0.000E+00	0.0000	8.185E-04	0.0040	8.377E-06	0.0000	1.361E-05	0.0001	5.832E-05	0.0003
U-235	9.794E-02	0.4802	5.493E-04	0.0027	0.000E+00	0.0000	1.374E-03	0.0067	7.934E-06	0.0000	1.285E-05	0.0001	8.758E-05	0.0004
U-238	1.842E-02	0.0903	3.761E-04	0.0018	0.000E+00	0.0000	7.609E-04	0.0037	7.933E-06	0.0000	1.288E-05	0.0001	5.490E-05	0.0003
Total	1.577E-01	0.7732	5.836E-03	0.0286	0.000E+00	0.0000	3.772E-02	0.1849	8.026E-05	0.0004	5.502E-05	0.0003	2.571E-03	0.0126

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.629E-03	0.0374
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.592E-02	0.2742
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.405E-03	0.0265
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.264E-03	0.0258
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.516E-03	0.0418
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.623E-03	0.0080
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.997E-02	0.4901
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.963E-02	0.0963
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.040E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.320E-03	0.0131	3.252E-04	0.0032	0.000E+00	0.0000	2.673E-04	0.0027	8.907E-07	0.0000	1.272E-07	0.0000	1.709E-04	0.0017
Np-237	1.209E-03	0.0120	1.612E-05	0.0002	0.000E+00	0.0000	2.539E-04	0.0025	9.926E-07	0.0000	4.342E-08	0.0000	8.218E-06	0.0001
Pu-239	3.798E-05	0.0004	1.391E-03	0.0138	0.000E+00	0.0000	1.149E-03	0.0114	7.652E-06	0.0001	2.710E-07	0.0000	7.362E-04	0.0073
Pu-240	2.032E-05	0.0002	1.288E-03	0.0128	0.000E+00	0.0000	1.063E-03	0.0106	7.083E-06	0.0001	2.511E-07	0.0000	6.814E-04	0.0068
Tc-99	5.837E-06	0.0001	9.660E-09	0.0000	0.000E+00	0.0000	1.572E-03	0.0156	9.242E-08	0.0000	2.519E-06	0.0000	1.087E-07	0.0000
U-234	2.110E-03	0.0210	3.043E-04	0.0030	0.000E+00	0.0000	3.023E-04	0.0030	5.907E-06	0.0001	9.741E-06	0.0001	4.432E-05	0.0004
U-235	7.142E-02	0.7100	7.357E-04	0.0073	0.000E+00	0.0000	9.306E-04	0.0093	5.463E-06	0.0001	8.861E-06	0.0001	1.327E-04	0.0013
U-238	1.250E-02	0.1243	2.660E-04	0.0026	0.000E+00	0.0000	2.241E-04	0.0022	5.371E-06	0.0001	8.814E-06	0.0001	3.882E-05	0.0004
Total	8.862E-02	0.8810	4.326E-03	0.0430	0.000E+00	0.0000	5.762E-03	0.0573	3.345E-05	0.0003	3.063E-05	0.0003	1.813E-03	0.0180

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.085E-03	0.0207
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.488E-03	0.0148
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.322E-03	0.0330
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.060E-03	0.0304
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.581E-03	0.0157
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.777E-03	0.0276
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.323E-02	0.7281
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.304E-02	0.1297
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.006E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.319E-02	1.317E-02	1.312E-02	1.295E-02	1.249E-02	1.099E-02	7.620E-03	2.081E-03
Am-241	Np-237+D	1.000E+00	4.123E-08	1.250E-07	2.911E-07	8.542E-07	2.316E-06	6.001E-06	9.215E-06	3.634E-06
Am-241	U-233	1.000E+00	5.809E-16	3.625E-15	1.803E-14	1.534E-13	1.213E-12	1.087E-11	5.773E-11	1.184E-10
Am-241	Th-229+D	1.000E+00	1.360E-18	2.027E-17	2.352E-16	6.156E-15	1.453E-13	4.601E-12	8.842E-11	1.179E-09
Am-241	ΣDSR (j)		1.319E-02	1.317E-02	1.312E-02	1.295E-02	1.249E-02	1.100E-02	7.629E-03	2.085E-03
Np-237+D	Np-237+D	1.000E+00	2.602E-01	2.588E-01	2.562E-01	2.472E-01	2.231E-01	1.559E-01	5.592E-02	1.475E-03
Np-237+D	U-233	1.000E+00	5.027E-09	1.373E-08	3.084E-08	8.911E-08	2.422E-07	6.462E-07	1.102E-06	7.137E-07
Np-237+D	Th-229+D	1.000E+00	1.676E-11	1.167E-10	6.138E-10	5.418E-09	4.405E-08	4.229E-07	2.737E-06	1.227E-05
Np-237+D	ΣDSR (j)		2.602E-01	2.588E-01	2.562E-01	2.472E-01	2.231E-01	1.559E-01	5.592E-02	1.488E-03
Pu-239	Pu-239	1.000E+00	6.408E-03	6.405E-03	6.398E-03	6.374E-03	6.305E-03	6.066E-03	5.405E-03	3.322E-03
Pu-239	U-235+D	1.000E+00	5.582E-11	1.675E-10	3.905E-10	1.169E-09	3.374E-09	1.087E-08	3.050E-08	7.998E-08
Pu-239	Pa-231	1.000E+00	5.047E-16	3.626E-15	1.936E-14	1.733E-13	1.442E-12	1.484E-11	1.128E-10	6.028E-10
Pu-239	Ac-227+D	1.000E+00	9.691E-18	1.407E-16	1.595E-15	3.970E-14	8.341E-13	1.935E-11	2.369E-10	2.459E-09
Pu-239	ΣDSR (j)		6.408E-03	6.405E-03	6.398E-03	6.374E-03	6.305E-03	6.066E-03	5.405E-03	3.322E-03
Pu-240	Pu-240	4.950E-08	3.163E-10	3.161E-10	3.157E-10	3.143E-10	3.104E-10	2.970E-10	2.606E-10	1.515E-10
Pu-240	Pu-240	1.000E+00	6.389E-03	6.385E-03	6.377E-03	6.350E-03	6.271E-03	6.001E-03	5.264E-03	3.060E-03
Pu-240	U-236	1.000E+00	2.427E-11	7.416E-11	1.738E-10	5.202E-10	1.489E-09	4.640E-09	1.175E-08	1.986E-08
Pu-240	Th-232	1.000E+00	2.573E-21	1.729E-20	8.958E-20	7.908E-19	6.586E-18	6.924E-17	5.658E-16	4.526E-15
Pu-240	Ra-228+D	1.000E+00	6.700E-21	9.876E-20	1.094E-18	2.413E-17	3.839E-16	5.766E-15	5.395E-14	4.725E-13
Pu-240	Th-228+D	1.000E+00	6.946E-22	1.978E-20	4.205E-19	1.922E-17	4.577E-16	8.095E-15	8.019E-14	7.337E-13
Pu-240	ΣDSR (j)		6.389E-03	6.385E-03	6.377E-03	6.350E-03	6.271E-03	6.001E-03	5.264E-03	3.060E-03
Tc-99	Tc-99	1.000E+00	1.506E-02	1.503E-02	1.498E-02	1.479E-02	1.426E-02	1.252E-02	8.516E-03	1.581E-03
U-234	U-234	1.000E+00	1.805E-03	1.803E-03	1.800E-03	1.788E-03	1.755E-03	1.643E-03	1.353E-03	6.231E-04
U-234	Th-230	1.000E+00	1.000E-08	2.914E-08	6.727E-08	2.002E-07	5.754E-07	1.837E-06	5.019E-06	1.210E-05
U-234	Ra-226+D	1.000E+00	1.071E-09	7.519E-09	3.978E-08	3.552E-07	2.974E-06	3.148E-05	2.619E-04	2.123E-03
U-234	Pb-210+D	1.000E+00	5.107E-13	5.138E-12	4.388E-11	8.809E-10	1.684E-08	3.631E-07	3.826E-06	1.879E-05
U-234	ΣDSR (j)		1.805E-03	1.803E-03	1.800E-03	1.789E-03	1.759E-03	1.677E-03	1.623E-03	2.777E-03
U-235+D	U-235+D	1.000E+00	1.134E-01	1.134E-01	1.132E-01	1.128E-01	1.117E-01	1.078E-01	9.748E-02	6.718E-02
U-235+D	Pa-231	1.000E+00	1.565E-06	4.780E-06	1.120E-05	3.352E-05	9.589E-05	2.983E-04	7.502E-04	1.162E-03
U-235+D	Ac-227+D	1.000E+00	3.886E-08	2.637E-07	1.351E-06	1.118E-05	7.734E-05	4.847E-04	1.739E-03	4.896E-03
U-235+D	ΣDSR (j)		1.134E-01	1.134E-01	1.132E-01	1.129E-01	1.119E-01	1.086E-01	9.997E-02	7.323E-02
U-238	U-238	5.400E-05	8.559E-08	8.551E-08	8.535E-08	8.479E-08	8.320E-08	7.784E-08	6.395E-08	2.906E-08
U-238+D	U-238+D	9.999E-01	2.302E-02	2.300E-02	2.298E-02	2.290E-02	2.265E-02	2.183E-02	1.963E-02	1.304E-02
U-238+D	U-234	9.999E-01	2.558E-09	7.667E-09	1.786E-08	5.322E-08	1.517E-07	4.681E-07	1.153E-06	1.770E-06
U-238+D	Th-230	9.999E-01	9.702E-15	6.522E-14	3.383E-13	2.986E-12	2.484E-11	2.596E-10	2.086E-09	1.577E-08
U-238+D	Ra-226+D	9.999E-01	7.574E-16	1.140E-14	1.332E-13	3.527E-12	8.561E-11	2.977E-09	7.335E-08	1.916E-06
U-238+D	Pb-210+D	9.999E-01	3.282E-19	6.807E-18	1.220E-16	6.955E-15	3.858E-13	2.897E-11	9.835E-10	1.648E-08
U-238+D	ΣDSR (j)		2.302E-02	2.300E-02	2.298E-02	2.290E-02	2.265E-02	2.183E-02	1.963E-02	1.304E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		1.895E+03	1.899E+03	1.906E+03	1.930E+03	2.001E+03	2.273E+03	3.277E+03	1.199E+04
Np-237		9.609E+01	9.659E+01	9.758E+01	1.011E+02	1.120E+02	1.603E+02	4.471E+02	1.680E+04
Pu-239		3.901E+03	3.903E+03	3.908E+03	3.922E+03	3.965E+03	4.121E+03	4.625E+03	7.526E+03
Pu-240		3.913E+03	3.915E+03	3.920E+03	3.937E+03	3.986E+03	4.166E+03	4.749E+03	8.170E+03
Tc-99		1.660E+03	1.663E+03	1.669E+03	1.690E+03	1.754E+03	1.997E+03	2.936E+03	1.582E+04
U-234		1.385E+04	1.386E+04	1.389E+04	1.398E+04	1.422E+04	1.491E+04	1.540E+04	9.003E+03
U-235		2.204E+02	2.205E+02	2.208E+02	2.215E+02	2.235E+02	2.302E+02	2.501E+02	3.414E+02
U-238		1.086E+03	1.087E+03	1.088E+03	1.092E+03	1.104E+03	1.145E+03	1.273E+03	1.917E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	0.000E+00	1.319E-02	1.895E+03	1.319E-02	1.895E+03
Np-237	1.000E+00	0.000E+00	2.602E-01	9.609E+01	2.602E-01	9.609E+01
Pu-239	1.000E+00	0.000E+00	6.408E-03	3.901E+03	6.408E-03	3.901E+03
Pu-240	1.000E+00	0.000E+00	6.389E-03	3.913E+03	6.389E-03	3.913E+03
Tc-99	1.000E+00	0.000E+00	1.506E-02	1.660E+03	1.506E-02	1.660E+03
U-234	1.000E+00	1.000E+03	2.777E-03	9.003E+03	1.805E-03	1.385E+04
U-235	1.000E+00	0.000E+00	1.134E-01	2.204E+02	1.134E-01	2.204E+02
U-238	1.000E+00	0.000E+00	2.302E-02	1.086E+03	2.302E-02	1.086E+03

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Branch Fraction Indicated										
Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.319E-02	1.317E-02	1.312E-02	1.295E-02	1.249E-02	1.099E-02	7.620E-03	2.081E-03
Np-237	Am-241	1.000E+00	4.123E-08	1.250E-07	2.911E-07	8.542E-07	2.316E-06	6.001E-06	9.215E-06	3.634E-06
Np-237	Np-237	1.000E+00	2.602E-01	2.588E-01	2.562E-01	2.472E-01	2.231E-01	1.559E-01	5.592E-02	1.475E-03
Np-237	ΣDOSE (j)		2.602E-01	2.588E-01	2.562E-01	2.472E-01	2.231E-01	1.560E-01	5.593E-02	1.479E-03
U-233	Am-241	1.000E+00	5.809E-16	3.625E-15	1.803E-14	1.534E-13	1.213E-12	1.087E-11	5.773E-11	1.184E-10
U-233	Np-237	1.000E+00	5.027E-09	1.373E-08	3.084E-08	8.911E-08	2.422E-07	6.462E-07	1.102E-06	7.137E-07
U-233	ΣDOSE (j)		5.027E-09	1.373E-08	3.084E-08	8.911E-08	2.422E-07	6.462E-07	1.102E-06	7.139E-07
Th-229	Am-241	1.000E+00	1.360E-18	2.027E-17	2.352E-16	6.156E-15	1.453E-13	4.601E-12	8.842E-11	1.179E-09
Th-229	Np-237	1.000E+00	1.676E-11	1.167E-10	6.138E-10	5.418E-09	4.405E-08	4.229E-07	2.737E-06	1.227E-05
Th-229	ΣDOSE (j)		1.676E-11	1.167E-10	6.138E-10	5.418E-09	4.405E-08	4.229E-07	2.737E-06	1.227E-05
Pu-239	Pu-239	1.000E+00	6.408E-03	6.405E-03	6.398E-03	6.374E-03	6.305E-03	6.066E-03	5.405E-03	3.322E-03
U-235	Pu-239	1.000E+00	5.582E-11	1.675E-10	3.905E-10	1.169E-09	3.374E-09	1.087E-08	3.050E-08	7.998E-08
U-235	U-235	1.000E+00	1.134E-01	1.134E-01	1.132E-01	1.128E-01	1.117E-01	1.078E-01	9.748E-02	6.718E-02
U-235	ΣDOSE (j)		1.134E-01	1.134E-01	1.132E-01	1.128E-01	1.117E-01	1.078E-01	9.748E-02	6.718E-02
Pa-231	Pu-239	1.000E+00	5.047E-16	3.626E-15	1.936E-14	1.733E-13	1.442E-12	1.484E-11	1.128E-10	6.028E-10
Pa-231	U-235	1.000E+00	1.565E-06	4.780E-06	1.120E-05	3.352E-05	9.589E-05	2.983E-04	7.502E-04	1.162E-03
Pa-231	ΣDOSE (j)		1.565E-06	4.780E-06	1.120E-05	3.352E-05	9.589E-05	2.983E-04	7.502E-04	1.162E-03
Ac-227	Pu-239	1.000E+00	9.691E-18	1.407E-16	1.595E-15	3.970E-14	8.341E-13	1.935E-11	2.369E-10	2.459E-09
Ac-227	U-235	1.000E+00	3.886E-08	2.637E-07	1.351E-06	1.118E-05	7.734E-05	4.847E-04	1.739E-03	4.896E-03
Ac-227	ΣDOSE (j)		3.886E-08	2.637E-07	1.351E-06	1.118E-05	7.734E-05	4.847E-04	1.739E-03	4.896E-03
Pu-240	Pu-240	4.950E-08	3.163E-10	3.161E-10	3.157E-10	3.143E-10	3.104E-10	2.970E-10	2.606E-10	1.515E-10
Pu-240	Pu-240	1.000E+00	6.389E-03	6.385E-03	6.377E-03	6.350E-03	6.271E-03	6.001E-03	5.264E-03	3.060E-03
Pu-240	ΣDOSE (j)		6.389E-03	6.385E-03	6.377E-03	6.350E-03	6.271E-03	6.001E-03	5.264E-03	3.060E-03
U-236	Pu-240	1.000E+00	2.427E-11	7.416E-11	1.738E-10	5.202E-10	1.489E-09	4.640E-09	1.175E-08	1.986E-08
Th-232	Pu-240	1.000E+00	2.573E-21	1.729E-20	8.958E-20	7.908E-19	6.586E-18	6.924E-17	5.658E-16	4.526E-15
Ra-228	Pu-240	1.000E+00	6.700E-21	9.876E-20	1.094E-18	2.413E-17	3.839E-16	5.766E-15	5.395E-14	4.725E-13
Th-228	Pu-240	1.000E+00	6.946E-22	1.978E-20	4.205E-19	1.922E-17	4.577E-16	8.095E-15	8.019E-14	7.337E-13
Tc-99	Tc-99	1.000E+00	1.506E-02	1.503E-02	1.498E-02	1.479E-02	1.426E-02	1.252E-02	8.516E-03	1.581E-03
U-234	U-234	1.000E+00	1.805E-03	1.803E-03	1.800E-03	1.788E-03	1.755E-03	1.643E-03	1.353E-03	6.231E-04
U-234	U-238	9.999E-01	2.558E-09	7.667E-09	1.786E-08	5.322E-08	1.517E-07	4.681E-07	1.153E-06	1.770E-06
U-234	ΣDOSE (j)		1.805E-03	1.803E-03	1.800E-03	1.788E-03	1.755E-03	1.643E-03	1.354E-03	6.249E-04
Th-230	U-234	1.000E+00	1.000E-08	2.914E-08	6.727E-08	2.002E-07	5.754E-07	1.837E-06	5.019E-06	1.210E-05
Th-230	U-238	9.999E-01	9.702E-15	6.522E-14	3.383E-13	2.986E-12	2.484E-11	2.596E-10	2.086E-09	1.577E-08
Th-230	ΣDOSE (j)		1.000E-08	2.914E-08	6.727E-08	2.002E-07	5.754E-07	1.837E-06	5.021E-06	1.211E-05

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.071E-09	7.519E-09	3.978E-08	3.552E-07	2.974E-06	3.148E-05	2.619E-04	2.123E-03
Ra-226	U-238	9.999E-01	7.574E-16	1.140E-14	1.332E-13	3.527E-12	8.561E-11	2.977E-09	7.335E-08	1.916E-06
Ra-226	ΣDOSE(j)		1.071E-09	7.519E-09	3.978E-08	3.552E-07	2.974E-06	3.149E-05	2.619E-04	2.125E-03
Pb-210	U-234	1.000E+00	5.107E-13	5.138E-12	4.388E-11	8.809E-10	1.684E-08	3.631E-07	3.826E-06	1.879E-05
Pb-210	U-238	9.999E-01	3.282E-19	6.807E-18	1.220E-16	6.955E-15	3.858E-13	2.897E-11	9.835E-10	1.648E-08
Pb-210	ΣDOSE(j)		5.107E-13	5.138E-12	4.388E-11	8.809E-10	1.684E-08	3.631E-07	3.827E-06	1.881E-05
U-238	U-238	5.400E-05	8.559E-08	8.551E-08	8.535E-08	8.479E-08	8.320E-08	7.784E-08	6.395E-08	2.906E-08
U-238	U-238	9.999E-01	2.302E-02	2.300E-02	2.298E-02	2.290E-02	2.265E-02	2.183E-02	1.963E-02	1.304E-02
U-238	ΣDOSE(j)		2.302E-02	2.300E-02	2.298E-02	2.290E-02	2.265E-02	2.183E-02	1.963E-02	1.304E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.839E-01	9.526E-01	8.506E-01	6.154E-01	1.982E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.229E-07	9.623E-07	3.136E-06	8.820E-06	2.353E-05	3.823E-05	1.902E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.149E-01	2.325E-01	7.733E-03
Np-237	ΣS(j):		1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.150E-01	2.326E-01	7.752E-03
U-233	Am-241	1.000E+00	0.000E+00	7.066E-13	6.330E-12	6.920E-11	5.946E-10	5.635E-09	3.290E-08	9.937E-08
U-233	Np-237	1.000E+00	0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.992E-04
U-233	ΣS(j):		0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.993E-04
Th-229	Am-241	1.000E+00	0.000E+00	2.225E-17	5.987E-16	2.190E-14	5.710E-13	1.874E-11	3.647E-10	5.072E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Th-229	ΣS(j):		0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.961E-01	9.870E-01	9.615E-01	8.772E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.846E-10	2.952E-09	9.818E-09	2.927E-08	9.544E-08	2.690E-07	7.232E-07
U-235	U-235	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
U-235	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.370E-14	1.039E-12	9.310E-12	1.017E-10	8.731E-10	8.235E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.913E-15	1.021E-13	2.374E-12	5.715E-11	7.109E-10	7.753E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.940E-08	4.919E-08	4.848E-08	4.650E-08	4.020E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.959E-08	8.871E-08	2.950E-07	8.787E-07	2.858E-06	7.991E-06	2.087E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.300E-19	6.567E-18	7.285E-17	6.526E-16	7.132E-15	6.126E-14	5.797E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.251E-19	2.222E-17	3.892E-16	6.056E-15	5.806E-14	5.711E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.164E-17	3.121E-16	5.709E-15	5.701E-14	5.683E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.988E-01	9.965E-01	9.885E-01	9.659E-01	8.907E-01	7.066E-01	3.142E-01
U-234	U-234	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.851E-01	9.512E-01	8.605E-01	6.060E-01
U-234	U-238	9.999E-01	0.000E+00	2.833E-06	8.492E-06	2.821E-05	8.378E-05	2.697E-04	7.321E-04	1.720E-03
U-234	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.775E-04	2.503E-03	7.040E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.147E-10	1.272E-09	1.137E-08	1.234E-07	1.039E-06	9.175E-06
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.777E-04	2.504E-03	7.049E-03

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.595E-04	1.425E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.969E-14	1.836E-12	4.921E-11	1.777E-09	4.462E-08	1.286E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.596E-04	1.427E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.340E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.422E-17	1.137E-15	1.343E-13	9.632E-12	8.277E-10	3.312E-08	1.174E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.341E-03
U-238	U-238	5.400E-05	5.400E-05	5.397E-05	5.392E-05	5.373E-05	5.320E-05	5.138E-05	4.651E-05	3.282E-05
U-238	U-238	9.999E-01	9.999E-01	9.994E-01	9.985E-01	9.950E-01	9.851E-01	9.514E-01	8.612E-01	6.077E-01
U-238	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.73 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Excavation Scenario - AF 167 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.670E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Excavation Scenario - AF 167 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.460E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.862E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.835E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.835E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.835E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Excavation Scenario - AF 167 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 1.777E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.491E-03	0.0053	2.117E-03	0.0012	0.000E+00	0.0000	4.038E-02	0.0227	4.560E-05	0.0000	6.496E-06	0.0000	8.622E-03	0.0049
Np-237	2.328E-01	0.1310	2.570E-03	0.0014	0.000E+00	0.0000	9.844E-01	0.5541	1.661E-03	0.0009	5.434E-05	0.0000	1.051E-02	0.0059
Pu-239	6.373E-05	0.0000	2.047E-03	0.0012	0.000E+00	0.0000	3.930E-02	0.0221	8.876E-05	0.0000	3.129E-06	0.0000	8.392E-03	0.0047
Pu-240	3.400E-05	0.0000	2.047E-03	0.0012	0.000E+00	0.0000	3.930E-02	0.0221	8.876E-05	0.0000	3.129E-06	0.0000	8.392E-03	0.0047
Tc-99	2.730E-05	0.0000	3.967E-08	0.0000	0.000E+00	0.0000	1.502E-01	0.0845	8.757E-06	0.0000	2.381E-04	0.0001	3.459E-06	0.0000
U-234	8.849E-05	0.0000	6.297E-04	0.0004	0.000E+00	0.0000	1.162E-02	0.0065	9.870E-05	0.0001	1.596E-04	0.0001	6.708E-04	0.0004
U-235	1.637E-01	0.0922	5.868E-04	0.0003	0.000E+00	0.0000	1.099E-02	0.0062	9.324E-05	0.0001	1.508E-04	0.0001	6.339E-04	0.0004
U-238	3.172E-02	0.0179	5.630E-04	0.0003	0.000E+00	0.0000	1.104E-02	0.0062	9.371E-05	0.0001	1.516E-04	0.0001	6.369E-04	0.0004
Total	4.379E-01	0.2465	1.056E-02	0.0059	0.000E+00	0.0000	1.287E+00	0.7246	2.178E-03	0.0012	7.672E-04	0.0004	3.786E-02	0.0213

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.066E-02	0.0341
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.232E+00	0.6935
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.989E-02	0.0281
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.986E-02	0.0281
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.505E-01	0.0847
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.327E-02	0.0075
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.762E-01	0.0992
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.420E-02	0.0249
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.777E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 167 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.476E-03	0.0054	2.113E-03	0.0012	0.000E+00	0.0000	4.029E-02	0.0228	4.553E-05	0.0000	6.485E-06	0.0000	8.609E-03	0.0049
Np-237	2.317E-01	0.1309	2.558E-03	0.0014	0.000E+00	0.0000	9.790E-01	0.5533	1.652E-03	0.0009	5.407E-05	0.0000	1.046E-02	0.0059
Pu-239	6.372E-05	0.0000	2.046E-03	0.0012	0.000E+00	0.0000	3.927E-02	0.0222	8.875E-05	0.0001	3.129E-06	0.0000	8.391E-03	0.0047
Pu-240	3.399E-05	0.0000	2.046E-03	0.0012	0.000E+00	0.0000	3.926E-02	0.0222	8.874E-05	0.0001	3.129E-06	0.0000	8.390E-03	0.0047
Tc-99	2.727E-05	0.0000	3.963E-08	0.0000	0.000E+00	0.0000	1.499E-01	0.0847	8.741E-06	0.0000	2.377E-04	0.0001	3.455E-06	0.0000
U-234	8.846E-05	0.0000	6.294E-04	0.0004	0.000E+00	0.0000	1.161E-02	0.0066	9.864E-05	0.0001	1.595E-04	0.0001	6.704E-04	0.0004
U-235	1.636E-01	0.0925	5.867E-04	0.0003	0.000E+00	0.0000	1.100E-02	0.0062	9.319E-05	0.0001	1.507E-04	0.0001	6.342E-04	0.0004
U-238	3.170E-02	0.0179	5.628E-04	0.0003	0.000E+00	0.0000	1.102E-02	0.0062	9.366E-05	0.0001	1.515E-04	0.0001	6.366E-04	0.0004
Total	4.367E-01	0.2468	1.054E-02	0.0060	0.000E+00	0.0000	1.281E+00	0.7242	2.170E-03	0.0012	7.662E-04	0.0004	3.779E-02	0.0214

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.054E-02	0.0342
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.225E+00	0.6926
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.986E-02	0.0282
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.983E-02	0.0282
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.502E-01	0.0849
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.326E-02	0.0075
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.761E-01	0.0995
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.417E-02	0.0250
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.769E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.446E-03	0.0054	2.106E-03	0.0012	0.000E+00	0.0000	4.011E-02	0.0229	4.538E-05	0.0000	6.464E-06	0.0000	8.581E-03	0.0049
Np-237	2.294E-01	0.1307	2.533E-03	0.0014	0.000E+00	0.0000	9.682E-01	0.5517	1.636E-03	0.0009	5.352E-05	0.0000	1.036E-02	0.0059
Pu-239	6.370E-05	0.0000	2.046E-03	0.0012	0.000E+00	0.0000	3.921E-02	0.0223	8.872E-05	0.0001	3.128E-06	0.0000	8.389E-03	0.0048
Pu-240	3.398E-05	0.0000	2.045E-03	0.0012	0.000E+00	0.0000	3.920E-02	0.0223	8.870E-05	0.0001	3.127E-06	0.0000	8.386E-03	0.0048
Tc-99	2.721E-05	0.0000	3.954E-08	0.0000	0.000E+00	0.0000	1.494E-01	0.0851	8.709E-06	0.0000	2.368E-04	0.0001	3.447E-06	0.0000
U-234	8.842E-05	0.0001	6.288E-04	0.0004	0.000E+00	0.0000	1.158E-02	0.0066	9.853E-05	0.0001	1.594E-04	0.0001	6.698E-04	0.0004
U-235	1.635E-01	0.0931	5.864E-04	0.0003	0.000E+00	0.0000	1.103E-02	0.0063	9.309E-05	0.0001	1.506E-04	0.0001	6.347E-04	0.0004
U-238	3.167E-02	0.0180	5.622E-04	0.0003	0.000E+00	0.0000	1.100E-02	0.0063	9.356E-05	0.0001	1.513E-04	0.0001	6.359E-04	0.0004
Total	4.342E-01	0.2474	1.051E-02	0.0060	0.000E+00	0.0000	1.270E+00	0.7235	2.152E-03	0.0012	7.643E-04	0.0004	3.766E-02	0.0215

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.029E-02	0.0344
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.212E+00	0.6907
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.980E-02	0.0284
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.975E-02	0.0283
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.496E-01	0.0853
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.323E-02	0.0075
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.760E-01	0.1003
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.411E-02	0.0251
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.755E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 167 m²

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.340E-03	0.0055	2.083E-03	0.0012	0.000E+00	0.0000	3.947E-02	0.0231	4.487E-05	0.0000	6.391E-06	0.0000	8.484E-03	0.0050
Np-237	2.217E-01	0.1300	2.448E-03	0.0014	0.000E+00	0.0000	9.315E-01	0.5460	1.578E-03	0.0009	5.167E-05	0.0000	1.001E-02	0.0059
Pu-239	6.365E-05	0.0000	2.044E-03	0.0012	0.000E+00	0.0000	3.899E-02	0.0229	8.863E-05	0.0001	3.125E-06	0.0000	8.381E-03	0.0049
Pu-240	3.393E-05	0.0000	2.042E-03	0.0012	0.000E+00	0.0000	3.896E-02	0.0228	8.856E-05	0.0001	3.122E-06	0.0000	8.374E-03	0.0049
Tc-99	2.699E-05	0.0000	3.922E-08	0.0000	0.000E+00	0.0000	1.475E-01	0.0864	8.599E-06	0.0000	2.338E-04	0.0001	3.419E-06	0.0000
U-234	8.857E-05	0.0001	6.267E-04	0.0004	0.000E+00	0.0000	1.149E-02	0.0067	9.815E-05	0.0001	1.587E-04	0.0001	6.675E-04	0.0004
U-235	1.629E-01	0.0955	5.862E-04	0.0003	0.000E+00	0.0000	1.112E-02	0.0065	9.273E-05	0.0001	1.500E-04	0.0001	6.372E-04	0.0004
U-238	3.156E-02	0.0185	5.603E-04	0.0003	0.000E+00	0.0000	1.091E-02	0.0064	9.319E-05	0.0001	1.507E-04	0.0001	6.337E-04	0.0004
Total	4.258E-01	0.2496	1.039E-02	0.0061	0.000E+00	0.0000	1.230E+00	0.7209	2.093E-03	0.0012	7.576E-04	0.0004	3.719E-02	0.0218

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.943E-02	0.0348
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.167E+00	0.6842
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-02	0.0291
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.950E-02	0.0290
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.477E-01	0.0866
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.313E-02	0.0077
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.755E-01	0.1029
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.390E-02	0.0257
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.706E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.044E-03	0.0057	2.016E-03	0.0013	0.000E+00	0.0000	3.771E-02	0.0239	4.343E-05	0.0000	6.186E-06	0.0000	8.214E-03	0.0052
Np-237	2.012E-01	0.1277	2.222E-03	0.0014	0.000E+00	0.0000	8.338E-01	0.5293	1.425E-03	0.0009	4.672E-05	0.0000	9.083E-03	0.0058
Pu-239	6.348E-05	0.0000	2.039E-03	0.0013	0.000E+00	0.0000	3.836E-02	0.0244	8.837E-05	0.0001	3.116E-06	0.0000	8.359E-03	0.0053
Pu-240	3.379E-05	0.0000	2.034E-03	0.0013	0.000E+00	0.0000	3.827E-02	0.0243	8.816E-05	0.0001	3.109E-06	0.0000	8.339E-03	0.0053
Tc-99	2.637E-05	0.0000	3.832E-08	0.0000	0.000E+00	0.0000	1.421E-01	0.0902	8.289E-06	0.0000	2.254E-04	0.0001	3.341E-06	0.0000
U-234	9.141E-05	0.0001	6.207E-04	0.0004	0.000E+00	0.0000	1.122E-02	0.0071	9.706E-05	0.0001	1.570E-04	0.0001	6.611E-04	0.0004
U-235	1.614E-01	0.1025	5.893E-04	0.0004	0.000E+00	0.0000	1.138E-02	0.0072	9.172E-05	0.0001	1.484E-04	0.0001	6.484E-04	0.0004
U-238	3.125E-02	0.0198	5.547E-04	0.0004	0.000E+00	0.0000	1.066E-02	0.0068	9.217E-05	0.0001	1.491E-04	0.0001	6.275E-04	0.0004
Total	4.031E-01	0.2559	1.008E-02	0.0064	0.000E+00	0.0000	1.124E+00	0.7132	1.935E-03	0.0012	7.391E-04	0.0005	3.594E-02	0.0228

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.703E-02	0.0362
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.048E+00	0.6651
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.892E-02	0.0311
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.877E-02	0.0310
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.424E-01	0.0904
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.285E-02	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.743E-01	0.1106
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.333E-02	0.0275
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.575E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 167 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.079E-03	0.0067	1.801E-03	0.0015	0.000E+00	0.0000	3.208E-02	0.0266	3.876E-05	0.0000	5.519E-06	0.0000	7.334E-03	0.0061
Np-237	1.431E-01	0.1185	1.581E-03	0.0013	0.000E+00	0.0000	5.650E-01	0.4677	9.976E-04	0.0008	3.283E-05	0.0000	6.463E-03	0.0053
Pu-239	6.291E-05	0.0001	2.020E-03	0.0017	0.000E+00	0.0000	3.620E-02	0.0300	8.745E-05	0.0001	3.085E-06	0.0000	8.283E-03	0.0069
Pu-240	3.330E-05	0.0000	2.004E-03	0.0017	0.000E+00	0.0000	3.592E-02	0.0297	8.678E-05	0.0001	3.061E-06	0.0000	8.219E-03	0.0068
Tc-99	2.432E-05	0.0000	3.534E-08	0.0000	0.000E+00	0.0000	1.248E-01	0.1033	7.282E-06	0.0000	1.980E-04	0.0002	3.081E-06	0.0000
U-234	1.287E-04	0.0001	6.003E-04	0.0005	0.000E+00	0.0000	1.035E-02	0.0086	9.336E-05	0.0001	1.512E-04	0.0001	6.394E-04	0.0005
U-235	1.565E-01	0.1295	6.173E-04	0.0005	0.000E+00	0.0000	1.224E-02	0.0101	8.832E-05	0.0001	1.430E-04	0.0001	7.056E-04	0.0006
U-238	3.018E-02	0.0250	5.359E-04	0.0004	0.000E+00	0.0000	9.802E-03	0.0081	8.865E-05	0.0001	1.436E-04	0.0001	6.061E-04	0.0005
Total	3.381E-01	0.2799	9.159E-03	0.0076	0.000E+00	0.0000	8.264E-01	0.6841	1.488E-03	0.0012	6.802E-04	0.0006	3.225E-02	0.0267

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.934E-02	0.0408
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.172E-01	0.5937
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.666E-02	0.0386
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.627E-02	0.0383
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.251E-01	0.1035
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.196E-02	0.0099
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.703E-01	0.1409
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.135E-02	0.0342
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.208E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 167 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.850E-03	0.0091	1.303E-03	0.0020	0.000E+00	0.0000	1.991E-02	0.0310	2.797E-05	0.0000	3.984E-06	0.0000	5.307E-03	0.0083
Np-237	5.414E-02	0.0842	5.982E-04	0.0009	0.000E+00	0.0000	1.831E-01	0.2847	3.594E-04	0.0006	1.202E-05	0.0000	2.444E-03	0.0038
Pu-239	6.132E-05	0.0001	1.968E-03	0.0031	0.000E+00	0.0000	3.023E-02	0.0470	8.490E-05	0.0001	2.997E-06	0.0000	8.069E-03	0.0125
Pu-240	3.194E-05	0.0000	1.923E-03	0.0030	0.000E+00	0.0000	2.953E-02	0.0459	8.295E-05	0.0001	2.930E-06	0.0000	7.883E-03	0.0123
Tc-99	1.929E-05	0.0000	2.803E-08	0.0000	0.000E+00	0.0000	8.489E-02	0.1320	4.955E-06	0.0000	1.348E-04	0.0002	2.444E-06	0.0000
U-234	4.488E-04	0.0007	5.457E-04	0.0008	0.000E+00	0.0000	8.185E-03	0.0127	8.377E-05	0.0001	1.361E-04	0.0002	5.832E-04	0.0009
U-235	1.435E-01	0.2231	7.089E-04	0.0011	0.000E+00	0.0000	1.374E-02	0.0214	7.934E-05	0.0001	1.285E-04	0.0002	8.758E-04	0.0014
U-238	2.732E-02	0.0425	4.854E-04	0.0008	0.000E+00	0.0000	7.609E-03	0.0118	7.933E-05	0.0001	1.288E-04	0.0002	5.490E-04	0.0009
Total	2.313E-01	0.3597	7.532E-03	0.0117	0.000E+00	0.0000	3.772E-01	0.5865	8.026E-04	0.0012	5.502E-04	0.0009	2.571E-02	0.0400

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.240E-02	0.0504
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.407E-01	0.3742
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.041E-02	0.0628
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.946E-02	0.0614
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.505E-02	0.1322
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.983E-03	0.0155
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.590E-01	0.2472
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.617E-02	0.0562
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.432E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.886E-03	0.0087	4.196E-04	0.0019	0.000E+00	0.0000	2.673E-03	0.0124	8.907E-06	0.0000	1.272E-06	0.0000	1.709E-03	0.0079
Np-237	1.832E-03	0.0085	2.081E-05	0.0001	0.000E+00	0.0000	2.539E-03	0.0118	9.926E-06	0.0000	4.342E-07	0.0000	8.218E-05	0.0004
Pu-239	5.642E-05	0.0003	1.796E-03	0.0083	0.000E+00	0.0000	1.149E-02	0.0533	7.652E-05	0.0004	2.710E-06	0.0000	7.362E-03	0.0342
Pu-240	2.764E-05	0.0001	1.662E-03	0.0077	0.000E+00	0.0000	1.063E-02	0.0493	7.083E-05	0.0003	2.511E-06	0.0000	6.814E-03	0.0316
Tc-99	8.614E-06	0.0000	1.247E-08	0.0000	0.000E+00	0.0000	1.572E-02	0.0729	9.242E-07	0.0000	2.519E-05	0.0001	1.087E-06	0.0000
U-234	3.331E-03	0.0155	3.927E-04	0.0018	0.000E+00	0.0000	3.023E-03	0.0140	5.907E-05	0.0003	9.741E-05	0.0005	4.432E-04	0.0021
U-235	1.071E-01	0.4969	9.494E-04	0.0044	0.000E+00	0.0000	9.306E-03	0.0432	5.463E-05	0.0003	8.861E-05	0.0004	1.327E-03	0.0062
U-238	1.932E-02	0.0896	3.433E-04	0.0016	0.000E+00	0.0000	2.242E-03	0.0104	5.371E-05	0.0002	8.814E-05	0.0004	3.882E-04	0.0018
Total	1.336E-01	0.6197	5.583E-03	0.0259	0.000E+00	0.0000	5.762E-02	0.2673	3.345E-04	0.0016	3.063E-04	0.0014	1.813E-02	0.0841

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.698E-03	0.0311
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.485E-03	0.0208
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.078E-02	0.0964
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.921E-02	0.0891
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.576E-02	0.0731
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.347E-03	0.0341
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.188E-01	0.5513
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.244E-02	0.1041
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.156E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 167 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.066E-02	6.054E-02	6.029E-02	5.942E-02	5.702E-02	4.931E-02	3.236E-02	6.687E-03
Am-241	Np-237+D	1.000E+00	1.904E-07	5.867E-07	1.372E-06	4.028E-06	1.087E-05	2.759E-05	3.966E-05	1.099E-05
Am-241	U-233	1.000E+00	4.369E-15	2.619E-14	1.274E-13	1.068E-12	8.372E-12	7.393E-11	3.757E-10	5.803E-10
Am-241	Th-229+D	1.000E+00	2.352E-18	3.423E-17	3.932E-16	1.023E-14	2.409E-13	7.591E-12	1.440E-10	1.896E-09
Am-241	ΣDSR (j)		6.066E-02	6.054E-02	6.029E-02	5.943E-02	5.703E-02	4.934E-02	3.240E-02	6.698E-03
Np-237+D	Np-237+D	1.000E+00	1.232E+00	1.225E+00	1.212E+00	1.167E+00	1.048E+00	7.172E-01	2.407E-01	4.461E-03
Np-237+D	U-233	1.000E+00	3.693E-08	9.735E-08	2.158E-07	6.182E-07	1.670E-06	4.394E-06	7.174E-06	3.497E-06
Np-237+D	Th-229+D	1.000E+00	2.862E-11	1.958E-10	1.023E-09	9.000E-09	7.301E-08	6.976E-07	4.458E-06	1.974E-05
Np-237+D	ΣDSR (j)		1.232E+00	1.225E+00	1.212E+00	1.167E+00	1.048E+00	7.172E-01	2.407E-01	4.485E-03
Pu-239	Pu-239	1.000E+00	4.989E-02	4.986E-02	4.980E-02	4.957E-02	4.892E-02	4.666E-02	4.041E-02	2.078E-02
Pu-239	U-235+D	1.000E+00	8.650E-11	2.599E-10	6.063E-10	1.815E-09	5.235E-09	1.683E-08	4.688E-08	1.225E-07
Pu-239	Pa-231	1.000E+00	4.091E-15	2.958E-14	1.582E-13	1.417E-12	1.177E-11	1.202E-10	8.872E-10	3.824E-09
Pu-239	Ac-227+D	1.000E+00	2.294E-17	3.053E-16	3.288E-15	7.932E-14	1.644E-12	3.763E-11	4.477E-10	4.288E-09
Pu-239	ΣDSR (j)		4.989E-02	4.986E-02	4.980E-02	4.957E-02	4.892E-02	4.666E-02	4.041E-02	2.078E-02
Pu-240	Pu-240	4.950E-08	2.468E-09	2.466E-09	2.463E-09	2.450E-09	2.414E-09	2.290E-09	1.953E-09	9.509E-10
Pu-240	Pu-240	1.000E+00	4.986E-02	4.983E-02	4.975E-02	4.950E-02	4.877E-02	4.627E-02	3.946E-02	1.921E-02
Pu-240	U-236	1.000E+00	1.788E-10	5.499E-10	1.291E-09	3.864E-09	1.103E-08	3.399E-08	8.293E-08	1.085E-07
Pu-240	Th-232	1.000E+00	1.271E-20	8.175E-20	4.145E-19	3.609E-18	2.979E-17	3.071E-16	2.371E-15	1.423E-14
Pu-240	Ra-228+D	1.000E+00	1.638E-20	2.472E-19	2.770E-18	6.138E-17	9.739E-16	1.439E-14	1.277E-13	9.351E-13
Pu-240	Th-228+D	1.000E+00	1.093E-21	3.062E-20	6.447E-19	2.930E-17	6.963E-16	1.230E-14	1.218E-13	1.175E-12
Pu-240	ΣDSR (j)		4.986E-02	4.983E-02	4.975E-02	4.950E-02	4.877E-02	4.627E-02	3.946E-02	1.921E-02
Tc-99	Tc-99	1.000E+00	1.505E-01	1.502E-01	1.496E-01	1.477E-01	1.424E-01	1.251E-01	8.505E-02	1.576E-02
U-234	U-234	1.000E+00	1.327E-02	1.326E-02	1.323E-02	1.313E-02	1.284E-02	1.188E-02	9.414E-03	3.337E-03
U-234	Th-230	1.000E+00	4.582E-08	1.287E-07	2.933E-07	8.660E-07	2.471E-06	7.740E-06	1.998E-05	3.624E-05
U-234	Ra-226+D	1.000E+00	2.154E-09	1.533E-08	8.152E-08	7.294E-07	6.093E-06	6.375E-05	5.118E-04	3.797E-03
U-234	Pb-210+D	1.000E+00	5.064E-12	5.075E-11	4.315E-10	8.627E-09	1.645E-07	3.541E-06	3.717E-05	1.768E-04
U-234	ΣDSR (j)		1.327E-02	1.326E-02	1.323E-02	1.313E-02	1.285E-02	1.196E-02	9.983E-03	7.347E-03
U-235+D	U-235+D	1.000E+00	1.762E-01	1.761E-01	1.759E-01	1.752E-01	1.733E-01	1.669E-01	1.498E-01	1.029E-01
U-235+D	Pa-231	1.000E+00	1.274E-05	3.907E-05	9.168E-05	2.743E-04	7.829E-04	2.415E-03	5.900E-03	7.373E-03
U-235+D	Ac-227+D	1.000E+00	8.869E-08	5.565E-07	2.745E-06	2.221E-05	1.522E-04	9.423E-04	3.285E-03	8.539E-03
U-235+D	ΣDSR (j)		1.762E-01	1.761E-01	1.760E-01	1.755E-01	1.743E-01	1.703E-01	1.590E-01	1.188E-01
U-238	U-238	5.400E-05	6.424E-07	6.417E-07	6.403E-07	6.355E-07	6.217E-07	5.753E-07	4.557E-07	1.608E-07
U-238+D	U-238+D	9.999E-01	4.420E-02	4.417E-02	4.411E-02	4.390E-02	4.332E-02	4.135E-02	3.616E-02	2.242E-02
U-238+D	U-234	9.999E-01	1.880E-08	5.636E-08	1.312E-07	3.907E-07	1.110E-06	3.386E-06	8.023E-06	9.477E-06
U-238+D	Th-230	9.999E-01	4.578E-14	2.936E-13	1.489E-12	1.296E-11	1.068E-10	1.094E-09	8.303E-09	4.726E-08
U-238+D	Ra-226+D	9.999E-01	1.512E-15	2.314E-14	2.724E-13	7.238E-12	1.753E-10	6.027E-09	1.434E-07	3.427E-06
U-238+D	Pb-210+D	9.999E-01	3.258E-18	6.733E-17	1.202E-15	6.817E-14	3.771E-12	2.826E-10	9.554E-09	1.550E-07
U-238+D	ΣDSR (j)		4.420E-02	4.417E-02	4.411E-02	4.390E-02	4.332E-02	4.135E-02	3.617E-02	2.244E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		4.121E+02	4.130E+02	4.147E+02	4.207E+02	4.384E+02	5.067E+02	7.716E+02	3.732E+03
Np-237		2.029E+01	2.040E+01	2.062E+01	2.142E+01	2.386E+01	3.486E+01	1.039E+02	5.575E+03
Pu-239		5.011E+02	5.014E+02	5.020E+02	5.044E+02	5.111E+02	5.358E+02	6.186E+02	1.203E+03
Pu-240		5.014E+02	5.017E+02	5.025E+02	5.051E+02	5.126E+02	5.403E+02	6.336E+02	1.301E+03
Tc-99		1.662E+02	1.665E+02	1.671E+02	1.692E+02	1.755E+02	1.999E+02	2.940E+02	1.587E+03
U-234		1.884E+03	1.886E+03	1.890E+03	1.904E+03	1.945E+03	2.091E+03	2.504E+03	3.403E+03
U-235		1.419E+02	1.420E+02	1.421E+02	1.424E+02	1.435E+02	1.468E+02	1.572E+02	2.104E+02
U-238		5.656E+02	5.660E+02	5.668E+02	5.694E+02	5.770E+02	6.046E+02	6.912E+02	1.114E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	0.000E+00	6.066E-02	4.121E+02	6.066E-02	4.121E+02
Np-237	1.000E+00	0.000E+00	1.232E+00	2.029E+01	1.232E+00	2.029E+01
Pu-239	1.000E+00	0.000E+00	4.989E-02	5.011E+02	4.989E-02	5.011E+02
Pu-240	1.000E+00	0.000E+00	4.986E-02	5.014E+02	4.986E-02	5.014E+02
Tc-99	1.000E+00	0.000E+00	1.505E-01	1.662E+02	1.505E-01	1.662E+02
U-234	1.000E+00	0.000E+00	1.327E-02	1.884E+03	1.327E-02	1.884E+03
U-235	1.000E+00	0.000E+00	1.762E-01	1.419E+02	1.762E-01	1.419E+02
U-238	1.000E+00	0.000E+00	4.420E-02	5.656E+02	4.420E-02	5.656E+02

Summary : Hematite - Excavation Scenario - AF 167 m²

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June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.066E-02	6.054E-02	6.029E-02	5.942E-02	5.702E-02	4.931E-02	3.236E-02	6.687E-03
Np-237	Am-241	1.000E+00	1.904E-07	5.867E-07	1.372E-06	4.028E-06	1.087E-05	2.759E-05	3.966E-05	1.099E-05
Np-237	Np-237	1.000E+00	1.232E+00	1.225E+00	1.212E+00	1.167E+00	1.048E+00	7.172E-01	2.407E-01	4.461E-03
Np-237	ΣDOSE (j)		1.232E+00	1.225E+00	1.212E+00	1.167E+00	1.048E+00	7.173E-01	2.407E-01	4.472E-03
U-233	Am-241	1.000E+00	4.369E-15	2.619E-14	1.274E-13	1.068E-12	8.372E-12	7.393E-11	3.757E-10	5.803E-10
U-233	Np-237	1.000E+00	3.693E-08	9.735E-08	2.158E-07	6.182E-07	1.670E-06	4.394E-06	7.174E-06	3.497E-06
U-233	ΣDOSE (j)		3.693E-08	9.735E-08	2.158E-07	6.182E-07	1.670E-06	4.394E-06	7.174E-06	3.498E-06
Th-229	Am-241	1.000E+00	2.352E-18	3.423E-17	3.932E-16	1.023E-14	2.409E-13	7.591E-12	1.440E-10	1.896E-09
Th-229	Np-237	1.000E+00	2.862E-11	1.958E-10	1.023E-09	9.000E-09	7.301E-08	6.976E-07	4.458E-06	1.974E-05
Th-229	ΣDOSE (j)		2.862E-11	1.958E-10	1.023E-09	9.000E-09	7.301E-08	6.976E-07	4.458E-06	1.974E-05
Pu-239	Pu-239	1.000E+00	4.989E-02	4.986E-02	4.980E-02	4.957E-02	4.892E-02	4.666E-02	4.041E-02	2.078E-02
U-235	Pu-239	1.000E+00	8.650E-11	2.599E-10	6.063E-10	1.815E-09	5.235E-09	1.683E-08	4.688E-08	1.225E-07
U-235	U-235	1.000E+00	1.762E-01	1.761E-01	1.759E-01	1.752E-01	1.733E-01	1.669E-01	1.498E-01	1.029E-01
U-235	ΣDOSE (j)		1.762E-01	1.761E-01	1.759E-01	1.752E-01	1.733E-01	1.669E-01	1.498E-01	1.029E-01
Pa-231	Pu-239	1.000E+00	4.091E-15	2.958E-14	1.582E-13	1.417E-12	1.177E-11	1.202E-10	8.872E-10	3.824E-09
Pa-231	U-235	1.000E+00	1.274E-05	3.907E-05	9.168E-05	2.743E-04	7.829E-04	2.415E-03	5.900E-03	7.373E-03
Pa-231	ΣDOSE (j)		1.274E-05	3.907E-05	9.168E-05	2.743E-04	7.829E-04	2.415E-03	5.900E-03	7.373E-03
Ac-227	Pu-239	1.000E+00	2.294E-17	3.053E-16	3.288E-15	7.932E-14	1.644E-12	3.763E-11	4.477E-10	4.288E-09
Ac-227	U-235	1.000E+00	8.869E-08	5.565E-07	2.745E-06	2.221E-05	1.522E-04	9.423E-04	3.285E-03	8.539E-03
Ac-227	ΣDOSE (j)		8.869E-08	5.565E-07	2.745E-06	2.221E-05	1.522E-04	9.423E-04	3.285E-03	8.539E-03
Pu-240	Pu-240	4.950E-08	2.468E-09	2.466E-09	2.463E-09	2.450E-09	2.414E-09	2.290E-09	1.953E-09	9.509E-10
Pu-240	Pu-240	1.000E+00	4.986E-02	4.983E-02	4.975E-02	4.950E-02	4.877E-02	4.627E-02	3.946E-02	1.921E-02
Pu-240	ΣDOSE (j)		4.986E-02	4.983E-02	4.975E-02	4.950E-02	4.877E-02	4.627E-02	3.946E-02	1.921E-02
U-236	Pu-240	1.000E+00	1.788E-10	5.499E-10	1.291E-09	3.864E-09	1.103E-08	3.399E-08	8.293E-08	1.085E-07
Th-232	Pu-240	1.000E+00	1.271E-20	8.175E-20	4.145E-19	3.609E-18	2.979E-17	3.071E-16	2.371E-15	1.423E-14
Ra-228	Pu-240	1.000E+00	1.638E-20	2.472E-19	2.770E-18	6.138E-17	9.739E-16	1.439E-14	1.277E-13	9.351E-13
Th-228	Pu-240	1.000E+00	1.093E-21	3.062E-20	6.447E-19	2.930E-17	6.963E-16	1.230E-14	1.218E-13	1.175E-12
Tc-99	Tc-99	1.000E+00	1.505E-01	1.502E-01	1.496E-01	1.477E-01	1.424E-01	1.251E-01	8.505E-02	1.576E-02
U-234	U-234	1.000E+00	1.327E-02	1.326E-02	1.323E-02	1.313E-02	1.284E-02	1.188E-02	9.414E-03	3.337E-03
U-234	U-238	9.999E-01	1.880E-08	5.636E-08	1.312E-07	3.907E-07	1.110E-06	3.386E-06	8.023E-06	9.477E-06
U-234	ΣDOSE (j)		1.327E-02	1.326E-02	1.323E-02	1.313E-02	1.284E-02	1.189E-02	9.422E-03	3.346E-03
Th-230	U-234	1.000E+00	4.582E-08	1.287E-07	2.933E-07	8.660E-07	2.471E-06	7.740E-06	1.998E-05	3.624E-05
Th-230	U-238	9.999E-01	4.578E-14	2.936E-13	1.489E-12	1.296E-11	1.068E-10	1.094E-09	8.303E-09	4.726E-08
Th-230	ΣDOSE (j)		4.582E-08	1.287E-07	2.933E-07	8.660E-07	2.471E-06	7.741E-06	1.998E-05	3.629E-05

Summary : Hematite - Excavation Scenario - AF 167 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	2.154E-09	1.533E-08	8.152E-08	7.294E-07	6.093E-06	6.375E-05	5.118E-04	3.797E-03
Ra-226	U-238	9.999E-01	1.512E-15	2.314E-14	2.724E-13	7.238E-12	1.753E-10	6.027E-09	1.434E-07	3.427E-06
Ra-226	ΣDOSE(j)		2.154E-09	1.533E-08	8.152E-08	7.294E-07	6.093E-06	6.376E-05	5.119E-04	3.801E-03
Pb-210	U-234	1.000E+00	5.064E-12	5.075E-11	4.315E-10	8.627E-09	1.645E-07	3.541E-06	3.717E-05	1.768E-04
Pb-210	U-238	9.999E-01	3.258E-18	6.733E-17	1.202E-15	6.817E-14	3.771E-12	2.826E-10	9.554E-09	1.550E-07
Pb-210	ΣDOSE(j)		5.064E-12	5.075E-11	4.315E-10	8.627E-09	1.645E-07	3.541E-06	3.717E-05	1.769E-04
U-238	U-238	5.400E-05	6.424E-07	6.417E-07	6.403E-07	6.355E-07	6.217E-07	5.753E-07	4.557E-07	1.608E-07
U-238	U-238	9.999E-01	4.420E-02	4.417E-02	4.411E-02	4.390E-02	4.332E-02	4.135E-02	3.616E-02	2.242E-02
U-238	ΣDOSE(j)		4.420E-02	4.417E-02	4.411E-02	4.390E-02	4.332E-02	4.135E-02	3.616E-02	2.242E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Excavation Scenario - AF 167 m²

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June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.839E-01	9.526E-01	8.506E-01	6.154E-01	1.982E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.229E-07	9.623E-07	3.136E-06	8.820E-06	2.353E-05	3.823E-05	1.902E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.149E-01	2.325E-01	7.733E-03
Np-237	ΣS(j):		1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.150E-01	2.326E-01	7.752E-03
U-233	Am-241	1.000E+00	0.000E+00	7.066E-13	6.330E-12	6.920E-11	5.946E-10	5.635E-09	3.290E-08	9.937E-08
U-233	Np-237	1.000E+00	0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.992E-04
U-233	ΣS(j):		0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.993E-04
Th-229	Am-241	1.000E+00	0.000E+00	2.225E-17	5.987E-16	2.190E-14	5.710E-13	1.874E-11	3.647E-10	5.072E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Th-229	ΣS(j):		0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.961E-01	9.870E-01	9.615E-01	8.772E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.846E-10	2.952E-09	9.818E-09	2.927E-08	9.544E-08	2.690E-07	7.232E-07
U-235	U-235	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
U-235	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.370E-14	1.039E-12	9.310E-12	1.017E-10	8.731E-10	8.235E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.913E-15	1.021E-13	2.374E-12	5.715E-11	7.109E-10	7.753E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.940E-08	4.919E-08	4.848E-08	4.650E-08	4.020E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.959E-08	8.871E-08	2.950E-07	8.787E-07	2.858E-06	7.991E-06	2.087E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.300E-19	6.567E-18	7.285E-17	6.526E-16	7.132E-15	6.126E-14	5.797E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.251E-19	2.222E-17	3.892E-16	6.056E-15	5.806E-14	5.711E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.164E-17	3.121E-16	5.709E-15	5.701E-14	5.683E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.988E-01	9.965E-01	9.885E-01	9.659E-01	8.907E-01	7.066E-01	3.142E-01
U-234	U-234	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.851E-01	9.512E-01	8.605E-01	6.060E-01
U-234	U-238	9.999E-01	0.000E+00	2.833E-06	8.492E-06	2.821E-05	8.378E-05	2.697E-04	7.321E-04	1.720E-03
U-234	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.775E-04	2.503E-03	7.040E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.147E-10	1.272E-09	1.137E-08	1.234E-07	1.039E-06	9.175E-06
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.777E-04	2.504E-03	7.049E-03

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.595E-04	1.425E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.969E-14	1.836E-12	4.921E-11	1.777E-09	4.462E-08	1.286E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.596E-04	1.427E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.340E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.422E-17	1.137E-15	1.343E-13	9.632E-12	8.277E-10	3.312E-08	1.174E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.341E-03
U-238	U-238	5.400E-05	5.400E-05	5.397E-05	5.392E-05	5.373E-05	5.320E-05	5.138E-05	4.651E-05	3.282E-05
U-238	U-238	9.999E-01	9.999E-01	9.994E-01	9.985E-01	9.950E-01	9.851E-01	9.514E-01	8.612E-01	6.077E-01
U-238	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.38 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Excavation Scenario - AF 5.0 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Excavation Scenario - AF 5.0 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.460E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.862E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.250E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.250E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.250E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 2.152E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.841E-03	0.0178	1.433E-03	0.0067	0.000E+00	0.0000	1.209E-03	0.0056	1.365E-06	0.0000	1.945E-07	0.0000	2.582E-04	0.0012
Np-237	8.933E-02	0.4150	1.740E-03	0.0081	0.000E+00	0.0000	2.947E-02	0.1369	4.972E-05	0.0002	1.627E-06	0.0000	3.146E-04	0.0015
Pu-239	2.496E-05	0.0001	1.386E-03	0.0064	0.000E+00	0.0000	1.177E-03	0.0055	2.657E-06	0.0000	9.370E-08	0.0000	2.513E-04	0.0012
Pu-240	1.477E-05	0.0001	1.386E-03	0.0064	0.000E+00	0.0000	1.177E-03	0.0055	2.657E-06	0.0000	9.369E-08	0.0000	2.512E-04	0.0012
Tc-99	1.063E-05	0.0000	2.686E-08	0.0000	0.000E+00	0.0000	4.496E-03	0.0209	2.622E-07	0.0000	7.129E-06	0.0000	1.036E-07	0.0000
U-234	3.549E-05	0.0002	4.264E-04	0.0020	0.000E+00	0.0000	3.480E-04	0.0016	2.955E-06	0.0000	4.779E-06	0.0000	2.008E-05	0.0001
U-235	6.307E-02	0.2931	3.973E-04	0.0018	0.000E+00	0.0000	3.291E-04	0.0015	2.792E-06	0.0000	4.515E-06	0.0000	1.898E-05	0.0001
U-238	1.199E-02	0.0557	3.813E-04	0.0018	0.000E+00	0.0000	3.304E-04	0.0015	2.806E-06	0.0000	4.538E-06	0.0000	1.907E-05	0.0001
Total	1.683E-01	0.7820	7.151E-03	0.0332	0.000E+00	0.0000	3.854E-02	0.1791	6.522E-05	0.0003	2.297E-05	0.0001	1.134E-03	0.0053

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.743E-03	0.0313
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.209E-01	0.5618
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.842E-03	0.0132
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.831E-03	0.0132
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.514E-03	0.0210
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.376E-04	0.0039
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.383E-02	0.2966
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.272E-02	0.0591
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.152E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.835E-03	0.0179	1.431E-03	0.0067	0.000E+00	0.0000	1.206E-03	0.0056	1.363E-06	0.0000	1.942E-07	0.0000	2.577E-04	0.0012
Np-237	8.890E-02	0.4143	1.732E-03	0.0081	0.000E+00	0.0000	2.931E-02	0.1366	4.947E-05	0.0002	1.619E-06	0.0000	3.131E-04	0.0015
Pu-239	2.496E-05	0.0001	1.386E-03	0.0065	0.000E+00	0.0000	1.176E-03	0.0055	2.657E-06	0.0000	9.368E-08	0.0000	2.512E-04	0.0012
Pu-240	1.477E-05	0.0001	1.386E-03	0.0065	0.000E+00	0.0000	1.176E-03	0.0055	2.657E-06	0.0000	9.367E-08	0.0000	2.512E-04	0.0012
Tc-99	1.062E-05	0.0000	2.683E-08	0.0000	0.000E+00	0.0000	4.488E-03	0.0209	2.617E-07	0.0000	7.116E-06	0.0000	1.035E-07	0.0000
U-234	3.548E-05	0.0002	4.262E-04	0.0020	0.000E+00	0.0000	3.476E-04	0.0016	2.953E-06	0.0000	4.776E-06	0.0000	2.007E-05	0.0001
U-235	6.304E-02	0.2938	3.972E-04	0.0019	0.000E+00	0.0000	3.295E-04	0.0015	2.790E-06	0.0000	4.512E-06	0.0000	1.899E-05	0.0001
U-238	1.198E-02	0.0558	3.811E-04	0.0018	0.000E+00	0.0000	3.300E-04	0.0015	2.804E-06	0.0000	4.535E-06	0.0000	1.906E-05	0.0001
Total	1.678E-01	0.7822	7.139E-03	0.0333	0.000E+00	0.0000	3.836E-02	0.1788	6.496E-05	0.0003	2.294E-05	0.0001	1.131E-03	0.0053

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.731E-03	0.0314
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.203E-01	0.5607
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.840E-03	0.0132
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.830E-03	0.0132
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.506E-03	0.0210
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.370E-04	0.0039
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.380E-02	0.2973
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.272E-02	0.0593
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.146E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.822E-03	0.0179	1.426E-03	0.0067	0.000E+00	0.0000	1.201E-03	0.0056	1.359E-06	0.0000	1.935E-07	0.0000	2.569E-04	0.0012
Np-237	8.804E-02	0.4129	1.715E-03	0.0080	0.000E+00	0.0000	2.899E-02	0.1359	4.897E-05	0.0002	1.603E-06	0.0000	3.101E-04	0.0015
Pu-239	2.495E-05	0.0001	1.385E-03	0.0065	0.000E+00	0.0000	1.174E-03	0.0055	2.656E-06	0.0000	9.365E-08	0.0000	2.512E-04	0.0012
Pu-240	1.477E-05	0.0001	1.385E-03	0.0065	0.000E+00	0.0000	1.174E-03	0.0055	2.656E-06	0.0000	9.363E-08	0.0000	2.511E-04	0.0012
Tc-99	1.059E-05	0.0000	2.677E-08	0.0000	0.000E+00	0.0000	4.472E-03	0.0210	2.608E-07	0.0000	7.090E-06	0.0000	1.032E-07	0.0000
U-234	3.546E-05	0.0002	4.258E-04	0.0020	0.000E+00	0.0000	3.468E-04	0.0016	2.950E-06	0.0000	4.771E-06	0.0000	2.005E-05	0.0001
U-235	6.298E-02	0.2954	3.971E-04	0.0019	0.000E+00	0.0000	3.302E-04	0.0015	2.787E-06	0.0000	4.508E-06	0.0000	1.900E-05	0.0001
U-238	1.197E-02	0.0561	3.807E-04	0.0018	0.000E+00	0.0000	3.292E-04	0.0015	2.801E-06	0.0000	4.530E-06	0.0000	1.904E-05	0.0001
Total	1.669E-01	0.7827	7.116E-03	0.0334	0.000E+00	0.0000	3.802E-02	0.1783	6.444E-05	0.0003	2.288E-05	0.0001	1.127E-03	0.0053

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.708E-03	0.0315
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.191E-01	0.5585
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.838E-03	0.0133
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.827E-03	0.0133
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.490E-03	0.0211
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.358E-04	0.0039
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.374E-02	0.2989
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.271E-02	0.0596
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.132E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.779E-03	0.0181	1.410E-03	0.0068	0.000E+00	0.0000	1.182E-03	0.0057	1.343E-06	0.0000	1.913E-07	0.0000	2.540E-04	0.0012
Np-237	8.509E-02	0.4077	1.658E-03	0.0079	0.000E+00	0.0000	2.789E-02	0.1336	4.725E-05	0.0002	1.547E-06	0.0000	2.997E-04	0.0014
Pu-239	2.493E-05	0.0001	1.384E-03	0.0066	0.000E+00	0.0000	1.167E-03	0.0056	2.654E-06	0.0000	9.356E-08	0.0000	2.509E-04	0.0012
Pu-240	1.474E-05	0.0001	1.383E-03	0.0066	0.000E+00	0.0000	1.166E-03	0.0056	2.651E-06	0.0000	9.349E-08	0.0000	2.507E-04	0.0012
Tc-99	1.051E-05	0.0001	2.656E-08	0.0000	0.000E+00	0.0000	4.415E-03	0.0212	2.574E-07	0.0000	7.000E-06	0.0000	1.024E-07	0.0000
U-234	3.551E-05	0.0002	4.243E-04	0.0020	0.000E+00	0.0000	3.440E-04	0.0016	2.939E-06	0.0000	4.753E-06	0.0000	1.999E-05	0.0001
U-235	6.277E-02	0.3008	3.970E-04	0.0019	0.000E+00	0.0000	3.328E-04	0.0016	2.776E-06	0.0000	4.491E-06	0.0000	1.908E-05	0.0001
U-238	1.193E-02	0.0571	3.794E-04	0.0018	0.000E+00	0.0000	3.266E-04	0.0016	2.790E-06	0.0000	4.513E-06	0.0000	1.897E-05	0.0001
Total	1.637E-01	0.7841	7.036E-03	0.0337	0.000E+00	0.0000	3.682E-02	0.1764	6.266E-05	0.0003	2.268E-05	0.0001	1.114E-03	0.0053

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.627E-03	0.0318
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.150E-01	0.5509
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.830E-03	0.0136
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.818E-03	0.0135
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.433E-03	0.0212
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.315E-04	0.0040
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.353E-02	0.3044
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.266E-02	0.0607
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.087E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.660E-03	0.0186	1.365E-03	0.0069	0.000E+00	0.0000	1.129E-03	0.0057	1.300E-06	0.0000	1.852E-07	0.0000	2.459E-04	0.0013
Np-237	7.721E-02	0.3928	1.504E-03	0.0077	0.000E+00	0.0000	2.496E-02	0.1270	4.268E-05	0.0002	1.399E-06	0.0000	2.719E-04	0.0014
Pu-239	2.487E-05	0.0001	1.380E-03	0.0070	0.000E+00	0.0000	1.149E-03	0.0058	2.646E-06	0.0000	9.329E-08	0.0000	2.503E-04	0.0013
Pu-240	1.468E-05	0.0001	1.377E-03	0.0070	0.000E+00	0.0000	1.146E-03	0.0058	2.639E-06	0.0000	9.308E-08	0.0000	2.497E-04	0.0013
Tc-99	1.027E-05	0.0001	2.595E-08	0.0000	0.000E+00	0.0000	4.256E-03	0.0217	2.482E-07	0.0000	6.748E-06	0.0000	1.000E-07	0.0000
U-234	3.653E-05	0.0002	4.203E-04	0.0021	0.000E+00	0.0000	3.360E-04	0.0017	2.906E-06	0.0000	4.701E-06	0.0000	1.979E-05	0.0001
U-235	6.219E-02	0.3164	3.991E-04	0.0020	0.000E+00	0.0000	3.406E-04	0.0017	2.746E-06	0.0000	4.443E-06	0.0000	1.941E-05	0.0001
U-238	1.181E-02	0.0601	3.756E-04	0.0019	0.000E+00	0.0000	3.190E-04	0.0016	2.759E-06	0.0000	4.465E-06	0.0000	1.879E-05	0.0001
Total	1.549E-01	0.7883	6.822E-03	0.0347	0.000E+00	0.0000	3.364E-02	0.1711	5.792E-05	0.0003	2.213E-05	0.0001	1.076E-03	0.0055

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.401E-03	0.0326
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.040E-01	0.5290
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.807E-03	0.0143
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.790E-03	0.0142
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.273E-03	0.0217
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.203E-04	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.295E-02	0.3203
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-02	0.0637
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.966E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.269E-03	0.0202	1.219E-03	0.0075	0.000E+00	0.0000	9.604E-04	0.0059	1.160E-06	0.0000	1.652E-07	0.0000	2.196E-04	0.0014
Np-237	5.493E-02	0.3392	1.070E-03	0.0066	0.000E+00	0.0000	1.692E-02	0.1044	2.987E-05	0.0002	9.831E-07	0.0000	1.935E-04	0.0012
Pu-239	2.464E-05	0.0002	1.368E-03	0.0084	0.000E+00	0.0000	1.084E-03	0.0067	2.618E-06	0.0000	9.236E-08	0.0000	2.480E-04	0.0015
Pu-240	1.447E-05	0.0001	1.357E-03	0.0084	0.000E+00	0.0000	1.076E-03	0.0066	2.598E-06	0.0000	9.165E-08	0.0000	2.461E-04	0.0015
Tc-99	9.467E-06	0.0001	2.393E-08	0.0000	0.000E+00	0.0000	3.738E-03	0.0231	2.180E-07	0.0000	5.928E-06	0.0000	9.225E-08	0.0000
U-234	5.026E-05	0.0003	4.065E-04	0.0025	0.000E+00	0.0000	3.097E-04	0.0019	2.795E-06	0.0000	4.527E-06	0.0000	1.914E-05	0.0001
U-235	6.028E-02	0.3722	4.180E-04	0.0026	0.000E+00	0.0000	3.665E-04	0.0023	2.644E-06	0.0000	4.280E-06	0.0000	2.113E-05	0.0001
U-238	1.140E-02	0.0704	3.628E-04	0.0022	0.000E+00	0.0000	2.935E-04	0.0018	2.654E-06	0.0000	4.299E-06	0.0000	1.815E-05	0.0001
Total	1.300E-01	0.8026	6.202E-03	0.0383	0.000E+00	0.0000	2.474E-02	0.1528	4.456E-05	0.0003	2.037E-05	0.0001	9.656E-04	0.0060

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.670E-03	0.0350
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.314E-02	0.4516
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.727E-03	0.0168
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.696E-03	0.0166
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.753E-03	0.0232
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.929E-04	0.0049
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.109E-02	0.3772
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.209E-02	0.0746
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.620E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.367E-03	0.0223	8.821E-04	0.0083	0.000E+00	0.0000	5.961E-04	0.0056	8.376E-07	0.0000	1.193E-07	0.0000	1.589E-04	0.0015
Np-237	2.077E-02	0.1957	4.051E-04	0.0038	0.000E+00	0.0000	5.483E-03	0.0517	1.076E-05	0.0001	3.597E-07	0.0000	7.319E-05	0.0007
Pu-239	2.402E-05	0.0002	1.333E-03	0.0126	0.000E+00	0.0000	9.050E-04	0.0085	2.542E-06	0.0000	8.973E-08	0.0000	2.416E-04	0.0023
Pu-240	1.388E-05	0.0001	1.302E-03	0.0123	0.000E+00	0.0000	8.842E-04	0.0083	2.484E-06	0.0000	8.771E-08	0.0000	2.360E-04	0.0022
Tc-99	7.511E-06	0.0001	1.898E-08	0.0000	0.000E+00	0.0000	2.541E-03	0.0239	1.483E-07	0.0000	4.035E-06	0.0000	7.318E-08	0.0000
U-234	1.685E-04	0.0016	3.695E-04	0.0035	0.000E+00	0.0000	2.451E-04	0.0023	2.508E-06	0.0000	4.076E-06	0.0000	1.746E-05	0.0002
U-235	5.527E-02	0.5206	4.800E-04	0.0045	0.000E+00	0.0000	4.115E-04	0.0039	2.375E-06	0.0000	3.848E-06	0.0000	2.622E-05	0.0002
U-238	1.032E-02	0.0973	3.287E-04	0.0031	0.000E+00	0.0000	2.278E-04	0.0021	2.375E-06	0.0000	3.858E-06	0.0000	1.644E-05	0.0002
Total	8.895E-02	0.8379	5.100E-03	0.0480	0.000E+00	0.0000	1.129E-02	0.1064	2.403E-05	0.0002	1.647E-05	0.0002	7.699E-04	0.0073

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.005E-03	0.0377
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.675E-02	0.2520
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.506E-03	0.0236
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.439E-03	0.0230
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.553E-03	0.0241
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.072E-04	0.0076
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.619E-02	0.5294
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.090E-02	0.1027
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.062E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.630E-04	0.0138	2.841E-04	0.0051	0.000E+00	0.0000	8.002E-05	0.0014	2.667E-07	0.0000	3.807E-08	0.0000	5.118E-05	0.0009
Np-237	6.689E-04	0.0121	1.409E-05	0.0003	0.000E+00	0.0000	7.602E-05	0.0014	2.972E-07	0.0000	1.300E-08	0.0000	2.461E-06	0.0000
Pu-239	2.126E-05	0.0004	1.216E-03	0.0220	0.000E+00	0.0000	3.439E-04	0.0062	2.291E-06	0.0000	8.112E-08	0.0000	2.204E-04	0.0040
Pu-240	1.194E-05	0.0002	1.125E-03	0.0204	0.000E+00	0.0000	3.183E-04	0.0058	2.121E-06	0.0000	7.518E-08	0.0000	2.040E-04	0.0037
Tc-99	3.278E-06	0.0001	8.442E-09	0.0000	0.000E+00	0.0000	4.707E-04	0.0085	2.767E-08	0.0000	7.543E-07	0.0000	3.255E-08	0.0000
U-234	1.149E-03	0.0208	2.659E-04	0.0048	0.000E+00	0.0000	9.052E-05	0.0016	1.769E-06	0.0000	2.916E-06	0.0001	1.327E-05	0.0002
U-235	3.970E-02	0.7184	6.429E-04	0.0116	0.000E+00	0.0000	2.786E-04	0.0050	1.635E-06	0.0000	2.653E-06	0.0000	3.972E-05	0.0007
U-238	6.876E-03	0.1244	2.324E-04	0.0042	0.000E+00	0.0000	6.711E-05	0.0012	1.608E-06	0.0000	2.639E-06	0.0000	1.162E-05	0.0002
Total	4.919E-02	0.8902	3.781E-03	0.0684	0.000E+00	0.0000	1.725E-03	0.0312	1.002E-05	0.0002	9.170E-06	0.0002	5.427E-04	0.0098

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.179E-03	0.0213
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.618E-04	0.0138
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.804E-03	0.0326
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.662E-03	0.0301
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.748E-04	0.0086
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.523E-03	0.0276
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.066E-02	0.7359
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.191E-03	0.1301
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.526E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 5.0 m²

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June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.743E-03	6.731E-03	6.708E-03	6.627E-03	6.400E-03	5.667E-03	4.001E-03	1.177E-03
Am-241	Np-237+D	1.000E+00	1.931E-08	5.828E-08	1.355E-07	3.975E-07	1.080E-06	2.815E-06	4.408E-06	1.859E-06
Am-241	U-233	1.000E+00	2.545E-16	1.648E-15	8.360E-15	7.200E-14	5.729E-13	5.197E-12	2.855E-11	6.917E-11
Am-241	Th-229+D	1.000E+00	7.673E-19	1.146E-17	1.331E-16	3.486E-15	8.230E-14	2.607E-12	5.017E-11	6.609E-10
Am-241	ΣDSR (j)		6.743E-03	6.731E-03	6.708E-03	6.627E-03	6.401E-03	5.670E-03	4.005E-03	1.179E-03
Np-237+D	Np-237+D	1.000E+00	1.209E-01	1.203E-01	1.191E-01	1.150E-01	1.040E-01	7.314E-02	2.675E-02	7.545E-04
Np-237+D	U-233	1.000E+00	2.251E-09	6.343E-09	1.442E-08	4.194E-08	1.146E-07	3.091E-07	5.453E-07	4.169E-07
Np-237+D	Th-229+D	1.000E+00	9.464E-12	6.602E-11	3.475E-10	3.068E-09	2.495E-08	2.396E-07	1.553E-06	6.878E-06
Np-237+D	ΣDSR (j)		1.209E-01	1.203E-01	1.191E-01	1.150E-01	1.040E-01	7.314E-02	2.675E-02	7.618E-04
Pu-239	Pu-239	1.000E+00	2.842E-03	2.840E-03	2.838E-03	2.830E-03	2.807E-03	2.727E-03	2.506E-03	1.804E-03
Pu-239	U-235+D	1.000E+00	3.142E-11	9.426E-11	2.198E-10	6.580E-10	1.899E-09	6.121E-09	1.718E-08	4.450E-08
Pu-239	Pa-231	1.000E+00	1.856E-16	1.327E-15	7.071E-15	6.327E-14	5.273E-13	5.464E-12	4.248E-11	2.583E-10
Pu-239	Ac-227+D	1.000E+00	5.394E-18	7.927E-17	9.040E-16	2.259E-14	4.754E-13	1.104E-11	1.357E-10	1.403E-09
Pu-239	ΣDSR (j)		2.842E-03	2.840E-03	2.838E-03	2.830E-03	2.807E-03	2.727E-03	2.506E-03	1.804E-03
Pu-240	Pu-240	4.950E-08	1.401E-10	1.401E-10	1.399E-10	1.395E-10	1.381E-10	1.335E-10	1.207E-10	8.226E-11
Pu-240	Pu-240	1.000E+00	2.831E-03	2.830E-03	2.827E-03	2.818E-03	2.790E-03	2.696E-03	2.439E-03	1.662E-03
Pu-240	U-236	1.000E+00	1.134E-11	3.442E-11	8.052E-11	2.410E-10	6.915E-10	2.179E-09	5.720E-09	1.169E-08
Pu-240	Th-232	1.000E+00	1.623E-21	1.114E-20	5.836E-20	5.184E-19	4.336E-18	4.598E-17	3.848E-16	3.388E-15
Pu-240	Ra-228+D	1.000E+00	3.537E-21	5.196E-20	5.747E-19	1.266E-17	2.016E-16	3.035E-15	2.861E-14	2.519E-13
Pu-240	Th-228+D	1.000E+00	3.826E-22	1.091E-20	2.322E-19	1.062E-17	2.528E-16	4.472E-15	4.430E-14	3.979E-13
Pu-240	ΣDSR (j)		2.831E-03	2.830E-03	2.827E-03	2.818E-03	2.790E-03	2.696E-03	2.439E-03	1.662E-03
Tc-99	Tc-99	1.000E+00	4.514E-03	4.506E-03	4.490E-03	4.433E-03	4.273E-03	3.753E-03	2.553E-03	4.748E-04
U-234	U-234	1.000E+00	8.376E-04	8.370E-04	8.357E-04	8.311E-04	8.183E-04	7.746E-04	6.608E-04	3.665E-04
U-234	Th-230	1.000E+00	6.332E-09	1.873E-08	4.348E-08	1.298E-07	3.743E-07	1.204E-06	3.362E-06	8.835E-06
U-234	Ra-226+D	1.000E+00	5.781E-10	4.053E-09	2.143E-08	1.913E-07	1.602E-06	1.699E-05	1.418E-04	1.142E-03
U-234	Pb-210+D	1.000E+00	1.544E-13	1.560E-12	1.339E-11	2.701E-10	5.175E-09	1.118E-07	1.184E-06	6.007E-06
U-234	ΣDSR (j)		8.376E-04	8.370E-04	8.358E-04	8.315E-04	8.203E-04	7.929E-04	8.072E-04	1.523E-03
U-235+D	U-235+D	1.000E+00	6.383E-02	6.379E-02	6.373E-02	6.351E-02	6.287E-02	6.070E-02	5.491E-02	3.737E-02
U-235+D	Pa-231	1.000E+00	5.736E-07	1.746E-06	4.089E-06	1.224E-05	3.506E-05	1.098E-04	2.825E-04	4.979E-04
U-235+D	Ac-227+D	1.000E+00	2.174E-08	1.491E-07	7.676E-07	6.365E-06	4.409E-05	2.768E-04	9.960E-04	2.793E-03
U-235+D	ΣDSR (j)		6.383E-02	6.380E-02	6.374E-02	6.353E-02	6.295E-02	6.109E-02	5.619E-02	4.066E-02
U-238	U-238	5.400E-05	3.944E-08	3.941E-08	3.935E-08	3.913E-08	3.852E-08	3.645E-08	3.104E-08	1.710E-08
U-238+D	U-238+D	9.999E-01	1.272E-02	1.272E-02	1.271E-02	1.266E-02	1.253E-02	1.209E-02	1.090E-02	7.189E-03
U-238+D	U-234	9.999E-01	1.187E-09	3.559E-09	8.291E-09	2.474E-08	7.075E-08	2.207E-07	5.631E-07	1.041E-06
U-238+D	Th-230	9.999E-01	6.058E-15	4.159E-14	2.178E-13	1.934E-12	1.615E-11	1.701E-10	1.397E-09	1.152E-08
U-238+D	Ra-226+D	9.999E-01	4.093E-16	6.151E-15	7.179E-14	1.900E-12	4.613E-11	1.606E-09	3.973E-08	1.031E-06
U-238+D	Pb-210+D	9.999E-01	9.912E-20	2.064E-18	3.718E-17	2.130E-15	1.185E-13	8.921E-12	3.042E-10	5.267E-09
U-238+D	ΣDSR (j)		1.272E-02	1.272E-02	1.271E-02	1.266E-02	1.253E-02	1.209E-02	1.090E-02	7.191E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		3.708E+03	3.714E+03	3.727E+03	3.772E+03	3.905E+03	4.410E+03	6.242E+03	2.121E+04
Np-237		2.068E+02	2.078E+02	2.099E+02	2.174E+02	2.404E+02	3.418E+02	9.347E+02	3.282E+04
Pu-239		8.798E+03	8.802E+03	8.809E+03	8.834E+03	8.906E+03	9.167E+03	9.977E+03	1.386E+04
Pu-240		8.830E+03	8.834E+03	8.843E+03	8.873E+03	8.960E+03	9.273E+03	1.025E+04	1.504E+04
Tc-99		5.538E+03	5.548E+03	5.568E+03	5.640E+03	5.850E+03	6.661E+03	9.791E+03	5.266E+04
U-234		2.985E+04	2.987E+04	2.991E+04	3.007E+04	3.048E+04	3.153E+04	3.097E+04	1.641E+04
U-235		3.917E+02	3.919E+02	3.922E+02	3.935E+02	3.971E+02	4.092E+02	4.449E+02	6.148E+02
U-238		1.965E+03	1.966E+03	1.968E+03	1.975E+03	1.995E+03	2.069E+03	2.293E+03	3.477E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	0.000E+00	6.743E-03	3.708E+03	6.743E-03	3.708E+03
Np-237	1.000E+00	0.000E+00	1.209E-01	2.068E+02	1.209E-01	2.068E+02
Pu-239	1.000E+00	0.000E+00	2.842E-03	8.798E+03	2.842E-03	8.798E+03
Pu-240	1.000E+00	0.000E+00	2.831E-03	8.830E+03	2.831E-03	8.830E+03
Tc-99	1.000E+00	0.000E+00	4.514E-03	5.538E+03	4.514E-03	5.538E+03
U-234	1.000E+00	1.000E+03	1.523E-03	1.641E+04	8.376E-04	2.985E+04
U-235	1.000E+00	0.000E+00	6.383E-02	3.917E+02	6.383E-02	3.917E+02
U-238	1.000E+00	0.000E+00	1.272E-02	1.965E+03	1.272E-02	1.965E+03

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.743E-03	6.731E-03	6.708E-03	6.627E-03	6.400E-03	5.667E-03	4.001E-03	1.177E-03
Np-237	Am-241	1.000E+00	1.931E-08	5.828E-08	1.355E-07	3.975E-07	1.080E-06	2.815E-06	4.408E-06	1.859E-06
Np-237	Np-237	1.000E+00	1.209E-01	1.203E-01	1.191E-01	1.150E-01	1.040E-01	7.314E-02	2.675E-02	7.545E-04
Np-237	ΣDOSE (j)		1.209E-01	1.203E-01	1.191E-01	1.150E-01	1.040E-01	7.315E-02	2.675E-02	7.564E-04
U-233	Am-241	1.000E+00	2.545E-16	1.648E-15	8.360E-15	7.200E-14	5.729E-13	5.197E-12	2.855E-11	6.917E-11
U-233	Np-237	1.000E+00	2.251E-09	6.343E-09	1.442E-08	4.194E-08	1.146E-07	3.091E-07	5.453E-07	4.169E-07
U-233	ΣDOSE (j)		2.251E-09	6.343E-09	1.442E-08	4.194E-08	1.146E-07	3.091E-07	5.453E-07	4.170E-07
Th-229	Am-241	1.000E+00	7.673E-19	1.146E-17	1.331E-16	3.486E-15	8.230E-14	2.607E-12	5.017E-11	6.609E-10
Th-229	Np-237	1.000E+00	9.464E-12	6.602E-11	3.475E-10	3.068E-09	2.495E-08	2.396E-07	1.553E-06	6.878E-06
Th-229	ΣDOSE (j)		9.464E-12	6.602E-11	3.475E-10	3.068E-09	2.495E-08	2.396E-07	1.553E-06	6.879E-06
Pu-239	Pu-239	1.000E+00	2.842E-03	2.840E-03	2.838E-03	2.830E-03	2.807E-03	2.727E-03	2.506E-03	1.804E-03
U-235	Pu-239	1.000E+00	3.142E-11	9.426E-11	2.198E-10	6.580E-10	1.899E-09	6.121E-09	1.718E-08	4.450E-08
U-235	U-235	1.000E+00	6.383E-02	6.379E-02	6.373E-02	6.351E-02	6.287E-02	6.070E-02	5.491E-02	3.737E-02
U-235	ΣDOSE (j)		6.383E-02	6.379E-02	6.373E-02	6.351E-02	6.287E-02	6.070E-02	5.491E-02	3.737E-02
Pa-231	Pu-239	1.000E+00	1.856E-16	1.327E-15	7.071E-15	6.327E-14	5.273E-13	5.464E-12	4.248E-11	2.583E-10
Pa-231	U-235	1.000E+00	5.736E-07	1.746E-06	4.089E-06	1.224E-05	3.506E-05	1.098E-04	2.825E-04	4.979E-04
Pa-231	ΣDOSE (j)		5.736E-07	1.746E-06	4.089E-06	1.224E-05	3.506E-05	1.098E-04	2.825E-04	4.979E-04
Ac-227	Pu-239	1.000E+00	5.394E-18	7.927E-17	9.040E-16	2.259E-14	4.754E-13	1.104E-11	1.357E-10	1.403E-09
Ac-227	U-235	1.000E+00	2.174E-08	1.491E-07	7.676E-07	6.365E-06	4.409E-05	2.768E-04	9.960E-04	2.793E-03
Ac-227	ΣDOSE (j)		2.174E-08	1.491E-07	7.676E-07	6.365E-06	4.409E-05	2.768E-04	9.960E-04	2.793E-03
Pu-240	Pu-240	4.950E-08	1.401E-10	1.401E-10	1.399E-10	1.395E-10	1.381E-10	1.335E-10	1.207E-10	8.226E-11
Pu-240	Pu-240	1.000E+00	2.831E-03	2.830E-03	2.827E-03	2.818E-03	2.790E-03	2.696E-03	2.439E-03	1.662E-03
Pu-240	ΣDOSE (j)		2.831E-03	2.830E-03	2.827E-03	2.818E-03	2.790E-03	2.696E-03	2.439E-03	1.662E-03
U-236	Pu-240	1.000E+00	1.134E-11	3.442E-11	8.052E-11	2.410E-10	6.915E-10	2.179E-09	5.720E-09	1.169E-08
Th-232	Pu-240	1.000E+00	1.623E-21	1.114E-20	5.836E-20	5.184E-19	4.336E-18	4.598E-17	3.848E-16	3.388E-15
Ra-228	Pu-240	1.000E+00	3.537E-21	5.196E-20	5.747E-19	1.266E-17	2.016E-16	3.035E-15	2.861E-14	2.519E-13
Th-228	Pu-240	1.000E+00	3.826E-22	1.091E-20	2.322E-19	1.062E-17	2.528E-16	4.472E-15	4.430E-14	3.979E-13
Tc-99	Tc-99	1.000E+00	4.514E-03	4.506E-03	4.490E-03	4.433E-03	4.273E-03	3.753E-03	2.553E-03	4.748E-04
U-234	U-234	1.000E+00	8.376E-04	8.370E-04	8.357E-04	8.311E-04	8.183E-04	7.746E-04	6.608E-04	3.665E-04
U-234	U-238	9.999E-01	1.187E-09	3.559E-09	8.291E-09	2.474E-08	7.075E-08	2.207E-07	5.631E-07	1.041E-06
U-234	ΣDOSE (j)		8.376E-04	8.370E-04	8.357E-04	8.312E-04	8.183E-04	7.748E-04	6.613E-04	3.675E-04
Th-230	U-234	1.000E+00	6.332E-09	1.873E-08	4.348E-08	1.298E-07	3.743E-07	1.204E-06	3.362E-06	8.835E-06
Th-230	U-238	9.999E-01	6.058E-15	4.159E-14	2.178E-13	1.934E-12	1.615E-11	1.701E-10	1.397E-09	1.152E-08
Th-230	ΣDOSE (j)		6.332E-09	1.873E-08	4.348E-08	1.298E-07	3.743E-07	1.204E-06	3.363E-06	8.847E-06

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	5.781E-10	4.053E-09	2.143E-08	1.913E-07	1.602E-06	1.699E-05	1.418E-04	1.142E-03
Ra-226	U-238	9.999E-01	4.093E-16	6.151E-15	7.179E-14	1.900E-12	4.613E-11	1.606E-09	3.973E-08	1.031E-06
Ra-226	ΣDOSE(j)		5.781E-10	4.054E-09	2.143E-08	1.913E-07	1.603E-06	1.699E-05	1.419E-04	1.143E-03
Pb-210	U-234	1.000E+00	1.544E-13	1.560E-12	1.339E-11	2.701E-10	5.175E-09	1.118E-07	1.184E-06	6.007E-06
Pb-210	U-238	9.999E-01	9.912E-20	2.064E-18	3.718E-17	2.130E-15	1.185E-13	8.921E-12	3.042E-10	5.267E-09
Pb-210	ΣDOSE(j)		1.544E-13	1.560E-12	1.339E-11	2.701E-10	5.175E-09	1.118E-07	1.184E-06	6.012E-06
U-238	U-238	5.400E-05	3.944E-08	3.941E-08	3.935E-08	3.913E-08	3.852E-08	3.645E-08	3.104E-08	1.710E-08
U-238	U-238	9.999E-01	1.272E-02	1.272E-02	1.271E-02	1.266E-02	1.253E-02	1.209E-02	1.090E-02	7.189E-03
U-238	ΣDOSE(j)		1.272E-02	1.272E-02	1.271E-02	1.266E-02	1.253E-02	1.209E-02	1.090E-02	7.189E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.839E-01	9.526E-01	8.506E-01	6.154E-01	1.982E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.229E-07	9.623E-07	3.136E-06	8.820E-06	2.353E-05	3.823E-05	1.902E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.149E-01	2.325E-01	7.733E-03
Np-237	ΣS(j):		1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.150E-01	2.326E-01	7.752E-03
U-233	Am-241	1.000E+00	0.000E+00	7.066E-13	6.330E-12	6.920E-11	5.946E-10	5.635E-09	3.290E-08	9.937E-08
U-233	Np-237	1.000E+00	0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.992E-04
U-233	ΣS(j):		0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.993E-04
Th-229	Am-241	1.000E+00	0.000E+00	2.225E-17	5.987E-16	2.190E-14	5.710E-13	1.874E-11	3.647E-10	5.072E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Th-229	ΣS(j):		0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.961E-01	9.870E-01	9.615E-01	8.772E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.846E-10	2.952E-09	9.818E-09	2.927E-08	9.544E-08	2.690E-07	7.232E-07
U-235	U-235	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
U-235	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.370E-14	1.039E-12	9.310E-12	1.017E-10	8.731E-10	8.235E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.913E-15	1.021E-13	2.374E-12	5.715E-11	7.109E-10	7.753E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.940E-08	4.919E-08	4.848E-08	4.650E-08	4.020E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.959E-08	8.871E-08	2.950E-07	8.787E-07	2.858E-06	7.991E-06	2.087E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.300E-19	6.567E-18	7.285E-17	6.526E-16	7.132E-15	6.126E-14	5.797E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.251E-19	2.222E-17	3.892E-16	6.056E-15	5.806E-14	5.711E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.164E-17	3.121E-16	5.709E-15	5.701E-14	5.683E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.988E-01	9.965E-01	9.885E-01	9.659E-01	8.907E-01	7.066E-01	3.142E-01
U-234	U-234	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.851E-01	9.512E-01	8.605E-01	6.060E-01
U-234	U-238	9.999E-01	0.000E+00	2.833E-06	8.492E-06	2.821E-05	8.378E-05	2.697E-04	7.321E-04	1.720E-03
U-234	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.775E-04	2.503E-03	7.040E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.147E-10	1.272E-09	1.137E-08	1.234E-07	1.039E-06	9.175E-06
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.777E-04	2.504E-03	7.049E-03

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.595E-04	1.425E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.969E-14	1.836E-12	4.921E-11	1.777E-09	4.462E-08	1.286E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.596E-04	1.427E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.340E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.422E-17	1.137E-15	1.343E-13	9.632E-12	8.277E-10	3.312E-08	1.174E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.341E-03
U-238	U-238	5.400E-05	5.400E-05	5.397E-05	5.392E-05	5.373E-05	5.320E-05	5.138E-05	4.651E-05	3.282E-05
U-238	U-238	9.999E-01	9.999E-01	9.994E-01	9.985E-01	9.950E-01	9.851E-01	9.514E-01	8.612E-01	6.077E-01
U-238	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.51 seconds

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Time = 0.000E+00	15
Time = 1.000E+00	16
Time = 3.000E+00	17
Time = 1.000E+01	18
Time = 3.000E+01	19
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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Excavation Scenario - AF 50 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Excavation Scenario - AF 50 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.460E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.862E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.022E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.154E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Excavation Scenario - AF 50 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

Attachment 4 to HEM-11-91

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.980E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Excavation Scenario - AF 50 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.250E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.250E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.250E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Excavation Scenario - AF 50 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 7.922E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - AF 50 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.443E-03	0.0107	1.853E-03	0.0023	0.000E+00	0.0000	1.209E-02	0.0153	1.365E-05	0.0000	1.945E-06	0.0000	2.582E-03	0.0033
Np-237	2.049E-01	0.2587	2.250E-03	0.0028	0.000E+00	0.0000	2.947E-01	0.3720	4.972E-04	0.0006	1.627E-05	0.0000	3.146E-03	0.0040
Pu-239	5.637E-05	0.0001	1.792E-03	0.0023	0.000E+00	0.0000	1.177E-02	0.0149	2.657E-05	0.0000	9.370E-07	0.0000	2.513E-03	0.0032
Pu-240	3.094E-05	0.0000	1.792E-03	0.0023	0.000E+00	0.0000	1.177E-02	0.0149	2.657E-05	0.0000	9.369E-07	0.0000	2.512E-03	0.0032
Tc-99	2.405E-05	0.0000	3.473E-08	0.0000	0.000E+00	0.0000	4.496E-02	0.0568	2.622E-06	0.0000	7.129E-05	0.0001	1.036E-06	0.0000
U-234	7.861E-05	0.0001	5.512E-04	0.0007	0.000E+00	0.0000	3.480E-03	0.0044	2.955E-05	0.0000	4.779E-05	0.0001	2.008E-04	0.0003
U-235	1.440E-01	0.1818	5.136E-04	0.0006	0.000E+00	0.0000	3.291E-03	0.0042	2.792E-05	0.0000	4.515E-05	0.0001	1.898E-04	0.0002
U-238	2.781E-02	0.0351	4.928E-04	0.0006	0.000E+00	0.0000	3.304E-03	0.0042	2.806E-05	0.0000	4.538E-05	0.0001	1.907E-04	0.0002
Total	3.854E-01	0.4865	9.244E-03	0.0117	0.000E+00	0.0000	3.854E-01	0.4865	6.522E-04	0.0008	2.297E-04	0.0003	1.134E-02	0.0143

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.498E-02	0.0315
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.056E-01	0.6382
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.615E-02	0.0204
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.613E-02	0.0204
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.506E-02	0.0569
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.388E-03	0.0055
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.481E-01	0.1869
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.187E-02	0.0402
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.922E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 50 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.430E-03	0.0107	1.850E-03	0.0023	0.000E+00	0.0000	1.206E-02	0.0153	1.363E-05	0.0000	1.942E-06	0.0000	2.577E-03	0.0033
Np-237	2.039E-01	0.2584	2.239E-03	0.0028	0.000E+00	0.0000	2.931E-01	0.3713	4.947E-04	0.0006	1.619E-05	0.0000	3.131E-03	0.0040
Pu-239	5.636E-05	0.0001	1.791E-03	0.0023	0.000E+00	0.0000	1.176E-02	0.0149	2.657E-05	0.0000	9.368E-07	0.0000	2.512E-03	0.0032
Pu-240	3.094E-05	0.0000	1.791E-03	0.0023	0.000E+00	0.0000	1.176E-02	0.0149	2.657E-05	0.0000	9.367E-07	0.0000	2.512E-03	0.0032
Tc-99	2.403E-05	0.0000	3.469E-08	0.0000	0.000E+00	0.0000	4.488E-02	0.0569	2.617E-06	0.0000	7.116E-05	0.0001	1.035E-06	0.0000
U-234	7.858E-05	0.0001	5.509E-04	0.0007	0.000E+00	0.0000	3.476E-03	0.0044	2.953E-05	0.0000	4.776E-05	0.0001	2.007E-04	0.0003
U-235	1.439E-01	0.1823	5.135E-04	0.0007	0.000E+00	0.0000	3.295E-03	0.0042	2.790E-05	0.0000	4.512E-05	0.0001	1.899E-04	0.0002
U-238	2.780E-02	0.0352	4.926E-04	0.0006	0.000E+00	0.0000	3.300E-03	0.0042	2.804E-05	0.0000	4.535E-05	0.0001	1.906E-04	0.0002
Total	3.843E-01	0.4868	9.228E-03	0.0117	0.000E+00	0.0000	3.836E-01	0.4860	6.496E-04	0.0008	2.294E-04	0.0003	1.131E-02	0.0143

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.493E-02	0.0316
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.029E-01	0.6372
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.614E-02	0.0205
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.612E-02	0.0204
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.498E-02	0.0570
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.383E-03	0.0056
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.480E-01	0.1875
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.185E-02	0.0404
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.894E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 50 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.402E-03	0.0107	1.844E-03	0.0024	0.000E+00	0.0000	1.201E-02	0.0153	1.359E-05	0.0000	1.935E-06	0.0000	2.569E-03	0.0033
Np-237	2.020E-01	0.2577	2.217E-03	0.0028	0.000E+00	0.0000	2.899E-01	0.3699	4.897E-04	0.0006	1.603E-05	0.0000	3.101E-03	0.0040
Pu-239	5.635E-05	0.0001	1.791E-03	0.0023	0.000E+00	0.0000	1.174E-02	0.0150	2.656E-05	0.0000	9.366E-07	0.0000	2.512E-03	0.0032
Pu-240	3.093E-05	0.0000	1.790E-03	0.0023	0.000E+00	0.0000	1.174E-02	0.0150	2.656E-05	0.0000	9.363E-07	0.0000	2.511E-03	0.0032
Tc-99	2.397E-05	0.0000	3.461E-08	0.0000	0.000E+00	0.0000	4.472E-02	0.0571	2.608E-06	0.0000	7.090E-05	0.0001	1.032E-06	0.0000
U-234	7.855E-05	0.0001	5.504E-04	0.0007	0.000E+00	0.0000	3.468E-03	0.0044	2.950E-05	0.0000	4.771E-05	0.0001	2.005E-04	0.0003
U-235	1.438E-01	0.1835	5.133E-04	0.0007	0.000E+00	0.0000	3.302E-03	0.0042	2.787E-05	0.0000	4.508E-05	0.0001	1.900E-04	0.0002
U-238	2.777E-02	0.0354	4.921E-04	0.0006	0.000E+00	0.0000	3.292E-03	0.0042	2.801E-05	0.0000	4.530E-05	0.0001	1.904E-04	0.0002
Total	3.821E-01	0.4876	9.198E-03	0.0117	0.000E+00	0.0000	3.802E-01	0.4851	6.444E-04	0.0008	2.288E-04	0.0003	1.127E-02	0.0144

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.484E-02	0.0317
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.977E-01	0.6351
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.612E-02	0.0206
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.609E-02	0.0205
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.482E-02	0.0572
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.374E-03	0.0056
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.479E-01	0.1887
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.182E-02	0.0406
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.836E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 50 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.308E-03	0.0109	1.823E-03	0.0024	0.000E+00	0.0000	1.182E-02	0.0155	1.343E-05	0.0000	1.913E-06	0.0000	2.540E-03	0.0033
Np-237	1.952E-01	0.2555	2.143E-03	0.0028	0.000E+00	0.0000	2.789E-01	0.3650	4.725E-04	0.0006	1.547E-05	0.0000	2.997E-03	0.0039
Pu-239	5.630E-05	0.0001	1.789E-03	0.0023	0.000E+00	0.0000	1.167E-02	0.0153	2.654E-05	0.0000	9.356E-07	0.0000	2.509E-03	0.0033
Pu-240	3.088E-05	0.0000	1.788E-03	0.0023	0.000E+00	0.0000	1.166E-02	0.0153	2.651E-05	0.0000	9.349E-07	0.0000	2.507E-03	0.0033
Tc-99	2.378E-05	0.0000	3.433E-08	0.0000	0.000E+00	0.0000	4.415E-02	0.0578	2.574E-06	0.0000	7.000E-05	0.0001	1.024E-06	0.0000
U-234	7.867E-05	0.0001	5.485E-04	0.0007	0.000E+00	0.0000	3.440E-03	0.0045	2.939E-05	0.0000	4.753E-05	0.0001	1.999E-04	0.0003
U-235	1.433E-01	0.1876	5.131E-04	0.0007	0.000E+00	0.0000	3.328E-03	0.0044	2.776E-05	0.0000	4.491E-05	0.0001	1.908E-04	0.0002
U-238	2.767E-02	0.0362	4.904E-04	0.0006	0.000E+00	0.0000	3.266E-03	0.0043	2.790E-05	0.0000	4.513E-05	0.0001	1.897E-04	0.0002
Total	3.747E-01	0.4904	9.095E-03	0.0119	0.000E+00	0.0000	3.682E-01	0.4820	6.266E-04	0.0008	2.268E-04	0.0003	1.114E-02	0.0146

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.450E-02	0.0321
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.797E-01	0.6279
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.606E-02	0.0210
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.602E-02	0.0210
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.425E-02	0.0579
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.343E-03	0.0057
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.474E-01	0.1929
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.169E-02	0.0415
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.640E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 50 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.045E-03	0.0113	1.765E-03	0.0025	0.000E+00	0.0000	1.129E-02	0.0159	1.300E-05	0.0000	1.852E-06	0.0000	2.459E-03	0.0035
Np-237	1.771E-01	0.2489	1.945E-03	0.0027	0.000E+00	0.0000	2.496E-01	0.3509	4.268E-04	0.0006	1.399E-05	0.0000	2.719E-03	0.0038
Pu-239	5.615E-05	0.0001	1.785E-03	0.0025	0.000E+00	0.0000	1.149E-02	0.0161	2.646E-05	0.0000	9.329E-07	0.0000	2.503E-03	0.0035
Pu-240	3.075E-05	0.0000	1.780E-03	0.0025	0.000E+00	0.0000	1.146E-02	0.0161	2.639E-05	0.0000	9.308E-07	0.0000	2.497E-03	0.0035
Tc-99	2.323E-05	0.0000	3.354E-08	0.0000	0.000E+00	0.0000	4.256E-02	0.0598	2.482E-06	0.0000	6.748E-05	0.0001	1.000E-06	0.0000
U-234	8.114E-05	0.0001	5.433E-04	0.0008	0.000E+00	0.0000	3.360E-03	0.0047	2.906E-05	0.0000	4.701E-05	0.0001	1.979E-04	0.0003
U-235	1.420E-01	0.1995	5.159E-04	0.0007	0.000E+00	0.0000	3.406E-03	0.0048	2.746E-05	0.0000	4.443E-05	0.0001	1.941E-04	0.0003
U-238	2.740E-02	0.0385	4.856E-04	0.0007	0.000E+00	0.0000	3.190E-03	0.0045	2.759E-05	0.0000	4.465E-05	0.0001	1.879E-04	0.0003
Total	3.547E-01	0.4986	8.819E-03	0.0124	0.000E+00	0.0000	3.364E-01	0.4728	5.792E-04	0.0008	2.213E-04	0.0003	1.076E-02	0.0151

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.357E-02	0.0331
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.319E-01	0.6070
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.586E-02	0.0223
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-02	0.0222
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.265E-02	0.0599
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.259E-03	0.0060
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-01	0.2054
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.133E-02	0.0440
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.115E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 50 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.186E-03	0.0128	1.576E-03	0.0028	0.000E+00	0.0000	9.604E-03	0.0171	1.160E-05	0.0000	1.652E-06	0.0000	2.196E-03	0.0039
Np-237	1.260E-01	0.2237	1.384E-03	0.0025	0.000E+00	0.0000	1.692E-01	0.3003	2.987E-04	0.0005	9.831E-06	0.0000	1.935E-03	0.0034
Pu-239	5.565E-05	0.0001	1.768E-03	0.0031	0.000E+00	0.0000	1.084E-02	0.0192	2.618E-05	0.0000	9.236E-07	0.0000	2.480E-03	0.0044
Pu-240	3.031E-05	0.0001	1.755E-03	0.0031	0.000E+00	0.0000	1.076E-02	0.0191	2.598E-05	0.0000	9.165E-07	0.0000	2.461E-03	0.0044
Tc-99	2.142E-05	0.0000	3.093E-08	0.0000	0.000E+00	0.0000	3.738E-02	0.0664	2.180E-06	0.0000	5.928E-05	0.0001	9.225E-07	0.0000
U-234	1.137E-04	0.0002	5.254E-04	0.0009	0.000E+00	0.0000	3.097E-03	0.0055	2.795E-05	0.0000	4.527E-05	0.0001	1.914E-04	0.0003
U-235	1.376E-01	0.2443	5.404E-04	0.0010	0.000E+00	0.0000	3.665E-03	0.0065	2.644E-05	0.0000	4.280E-05	0.0001	2.113E-04	0.0004
U-238	2.646E-02	0.0470	4.691E-04	0.0008	0.000E+00	0.0000	2.935E-03	0.0052	2.654E-05	0.0000	4.299E-05	0.0001	1.815E-04	0.0003
Total	2.975E-01	0.5282	8.018E-03	0.0142	0.000E+00	0.0000	2.474E-01	0.4393	4.456E-04	0.0008	2.037E-04	0.0004	9.656E-03	0.0171

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.058E-02	0.0365
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.988E-01	0.5305
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.517E-02	0.0269
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.503E-02	0.0267
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.746E-02	0.0665
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.001E-03	0.0071
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.421E-01	0.2523
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.011E-02	0.0535
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.633E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - AF 50 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.204E-03	0.0157	1.140E-03	0.0034	0.000E+00	0.0000	5.961E-03	0.0180	8.376E-06	0.0000	1.193E-06	0.0000	1.589E-03	0.0048
Np-237	4.766E-02	0.1439	5.237E-04	0.0016	0.000E+00	0.0000	5.483E-02	0.1656	1.076E-04	0.0003	3.597E-06	0.0000	7.319E-04	0.0022
Pu-239	5.424E-05	0.0002	1.723E-03	0.0052	0.000E+00	0.0000	9.050E-03	0.0273	2.542E-05	0.0001	8.973E-07	0.0000	2.416E-03	0.0073
Pu-240	2.907E-05	0.0001	1.683E-03	0.0051	0.000E+00	0.0000	8.842E-03	0.0267	2.484E-05	0.0001	8.771E-07	0.0000	2.360E-03	0.0071
Tc-99	1.700E-05	0.0001	2.454E-08	0.0000	0.000E+00	0.0000	2.541E-02	0.0767	1.483E-06	0.0000	4.035E-05	0.0001	7.318E-07	0.0000
U-234	3.929E-04	0.0012	4.777E-04	0.0014	0.000E+00	0.0000	2.451E-03	0.0074	2.508E-05	0.0001	4.076E-05	0.0001	1.746E-04	0.0005
U-235	1.262E-01	0.3811	6.205E-04	0.0019	0.000E+00	0.0000	4.115E-03	0.0124	2.375E-05	0.0001	3.848E-05	0.0001	2.622E-04	0.0008
U-238	2.395E-02	0.0723	4.249E-04	0.0013	0.000E+00	0.0000	2.278E-03	0.0069	2.375E-05	0.0001	3.858E-05	0.0001	1.644E-04	0.0005
Total	2.035E-01	0.6145	6.593E-03	0.0199	0.000E+00	0.0000	1.129E-01	0.3411	2.403E-04	0.0007	1.647E-04	0.0005	7.699E-03	0.0232

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.390E-02	0.0420
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.039E-01	0.3136
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.327E-02	0.0401
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.294E-02	0.0391
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.547E-02	0.0769
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.562E-03	0.0108
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.313E-01	0.3964
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.688E-02	0.0812
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.311E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.678E-03	0.0116	3.673E-04	0.0025	0.000E+00	0.0000	8.003E-04	0.0056	2.667E-06	0.0000	3.807E-07	0.0000	5.118E-04	0.0036
Np-237	1.594E-03	0.0111	1.822E-05	0.0001	0.000E+00	0.0000	7.602E-04	0.0053	2.972E-06	0.0000	1.300E-07	0.0000	2.461E-05	0.0002
Pu-239	4.946E-05	0.0003	1.572E-03	0.0109	0.000E+00	0.0000	3.439E-03	0.0239	2.291E-05	0.0002	8.112E-07	0.0000	2.204E-03	0.0153
Pu-240	2.513E-05	0.0002	1.455E-03	0.0101	0.000E+00	0.0000	3.183E-03	0.0221	2.121E-05	0.0001	7.518E-07	0.0000	2.040E-03	0.0142
Tc-99	7.558E-06	0.0001	1.091E-08	0.0000	0.000E+00	0.0000	4.707E-03	0.0327	2.767E-07	0.0000	7.543E-06	0.0001	3.255E-07	0.0000
U-234	2.848E-03	0.0198	3.438E-04	0.0024	0.000E+00	0.0000	9.052E-04	0.0063	1.769E-05	0.0001	2.916E-05	0.0002	1.327E-04	0.0009
U-235	9.346E-02	0.6486	8.310E-04	0.0058	0.000E+00	0.0000	2.786E-03	0.0193	1.635E-05	0.0001	2.653E-05	0.0002	3.972E-04	0.0028
U-238	1.667E-02	0.1157	3.005E-04	0.0021	0.000E+00	0.0000	6.711E-04	0.0047	1.608E-05	0.0001	2.639E-05	0.0002	1.162E-04	0.0008
Total	1.163E-01	0.8074	4.887E-03	0.0339	0.000E+00	0.0000	1.725E-02	0.1197	1.002E-04	0.0007	9.170E-05	0.0006	5.427E-03	0.0377

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.360E-03	0.0233
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.400E-03	0.0167
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.288E-03	0.0506
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.725E-03	0.0467
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.722E-03	0.0328
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.277E-03	0.0297
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.752E-02	0.6768
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.780E-02	0.1235
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.441E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.498E-02	2.493E-02	2.484E-02	2.450E-02	2.357E-02	2.056E-02	1.389E-02	3.354E-03
Am-241	Np-237+D	1.000E+00	7.916E-08	2.419E-07	5.644E-07	1.657E-06	4.482E-06	1.150E-05	1.711E-05	5.869E-06
Am-241	U-233	1.000E+00	1.437E-15	8.741E-15	4.287E-14	3.615E-13	2.842E-12	2.524E-11	1.305E-10	2.280E-10
Am-241	Th-229+D	1.000E+00	1.825E-18	2.704E-17	3.130E-16	8.179E-15	1.929E-13	6.102E-12	1.169E-10	1.574E-09
Am-241	ΣDSR (j)		2.498E-02	2.493E-02	2.484E-02	2.450E-02	2.357E-02	2.058E-02	1.390E-02	3.360E-03
Np-237+D	Np-237+D	1.000E+00	5.056E-01	5.029E-01	4.977E-01	4.797E-01	4.319E-01	2.988E-01	1.039E-01	2.382E-03
Np-237+D	U-233	1.000E+00	1.225E-08	3.272E-08	7.289E-08	2.095E-07	5.673E-07	1.500E-06	2.492E-06	1.374E-06
Np-237+D	Th-229+D	1.000E+00	2.242E-11	1.554E-10	8.161E-10	7.198E-09	5.849E-08	5.608E-07	3.618E-06	1.638E-05
Np-237+D	ΣDSR (j)		5.056E-01	5.029E-01	4.977E-01	4.797E-01	4.319E-01	2.988E-01	1.039E-01	2.400E-03
Pu-239	Pu-239	1.000E+00	1.615E-02	1.614E-02	1.612E-02	1.606E-02	1.586E-02	1.517E-02	1.327E-02	7.288E-03
Pu-239	U-235+D	1.000E+00	7.284E-11	2.186E-10	5.098E-10	1.526E-09	4.404E-09	1.418E-08	3.972E-08	1.051E-07
Pu-239	Pa-231	1.000E+00	1.319E-15	9.510E-15	5.084E-14	4.553E-13	3.784E-12	3.874E-11	2.892E-10	1.365E-09
Pu-239	Ac-227+D	1.000E+00	1.418E-17	2.004E-16	2.236E-15	5.516E-14	1.154E-12	2.667E-11	3.240E-10	3.328E-09
Pu-239	ΣDSR (j)		1.615E-02	1.614E-02	1.612E-02	1.606E-02	1.586E-02	1.517E-02	1.327E-02	7.288E-03
Pu-240	Pu-240	4.950E-08	7.984E-10	7.978E-10	7.967E-10	7.928E-10	7.818E-10	7.439E-10	6.406E-10	3.329E-10
Pu-240	Pu-240	1.000E+00	1.613E-02	1.612E-02	1.609E-02	1.602E-02	1.579E-02	1.503E-02	1.294E-02	6.725E-03
Pu-240	U-236	1.000E+00	5.903E-11	1.811E-10	4.251E-10	1.272E-09	3.635E-09	1.125E-08	2.781E-08	4.025E-08
Pu-240	Th-232	1.000E+00	4.919E-21	3.226E-20	1.653E-19	1.448E-18	1.200E-17	1.249E-16	9.909E-16	6.913E-15
Pu-240	Ra-228+D	1.000E+00	1.002E-20	1.488E-19	1.655E-18	3.655E-17	5.810E-16	8.679E-15	7.985E-14	6.742E-13
Pu-240	Th-228+D	1.000E+00	9.221E-22	2.616E-20	5.549E-19	2.533E-17	6.029E-16	1.066E-14	1.056E-13	9.966E-13
Pu-240	ΣDSR (j)		1.613E-02	1.612E-02	1.609E-02	1.602E-02	1.579E-02	1.503E-02	1.294E-02	6.725E-03
Tc-99	Tc-99	1.000E+00	4.506E-02	4.498E-02	4.482E-02	4.425E-02	4.265E-02	3.746E-02	2.547E-02	4.722E-03
U-234	U-234	1.000E+00	4.388E-03	4.383E-03	4.374E-03	4.343E-03	4.254E-03	3.952E-03	3.176E-03	1.250E-03
U-234	Th-230	1.000E+00	1.844E-08	5.270E-08	1.209E-07	3.582E-07	1.026E-06	3.243E-06	8.612E-06	1.824E-05
U-234	Ra-226+D	1.000E+00	1.511E-09	1.065E-08	5.641E-08	5.041E-07	4.218E-06	4.450E-05	3.664E-04	2.954E-03
U-234	Pb-210+D	1.000E+00	1.520E-12	1.526E-11	1.299E-10	2.601E-09	4.964E-08	1.069E-06	1.123E-05	5.403E-05
U-234	ΣDSR (j)		4.388E-03	4.383E-03	4.374E-03	4.343E-03	4.259E-03	4.001E-03	3.562E-03	4.277E-03
U-235+D	U-235+D	1.000E+00	1.481E-01	1.480E-01	1.478E-01	1.473E-01	1.458E-01	1.407E-01	1.269E-01	8.826E-02
U-235+D	Pa-231	1.000E+00	4.099E-06	1.255E-05	2.944E-05	8.808E-05	2.516E-04	7.788E-04	1.923E-03	2.631E-03
U-235+D	Ac-227+D	1.000E+00	5.621E-08	3.723E-07	1.887E-06	1.550E-05	1.070E-04	6.682E-04	2.378E-03	6.628E-03
U-235+D	ΣDSR (j)		1.481E-01	1.480E-01	1.479E-01	1.474E-01	1.462E-01	1.421E-01	1.313E-01	9.752E-02
U-238	U-238	5.400E-05	2.106E-07	2.104E-07	2.100E-07	2.085E-07	2.042E-07	1.896E-07	1.522E-07	5.928E-08
U-238+D	U-238+D	9.999E-01	3.187E-02	3.185E-02	3.182E-02	3.169E-02	3.133E-02	3.011E-02	2.688E-02	1.780E-02
U-238+D	U-234	9.999E-01	6.218E-09	1.864E-08	4.340E-08	1.293E-07	3.678E-07	1.126E-06	2.706E-06	3.551E-06
U-238+D	Th-230	9.999E-01	1.817E-14	1.191E-13	6.107E-13	5.352E-12	4.430E-11	4.583E-10	3.579E-09	2.378E-08
U-238+D	Ra-226+D	9.999E-01	1.066E-15	1.613E-14	1.888E-13	5.004E-12	1.214E-10	4.207E-09	1.027E-07	2.666E-06
U-238+D	Pb-210+D	9.999E-01	9.779E-19	2.023E-17	3.617E-16	2.054E-14	1.138E-12	8.530E-11	2.888E-09	4.738E-08
U-238+D	ΣDSR (j)		3.187E-02	3.185E-02	3.182E-02	3.169E-02	3.133E-02	3.011E-02	2.688E-02	1.780E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		1.001E+03	1.003E+03	1.006E+03	1.020E+03	1.061E+03	1.215E+03	1.798E+03	7.441E+03
Np-237		4.945E+01	4.971E+01	5.023E+01	5.211E+01	5.789E+01	8.366E+01	2.407E+02	1.042E+04
Pu-239		1.548E+03	1.549E+03	1.550E+03	1.557E+03	1.577E+03	1.648E+03	1.884E+03	3.430E+03
Pu-240		1.550E+03	1.551E+03	1.553E+03	1.561E+03	1.583E+03	1.664E+03	1.932E+03	3.717E+03
Tc-99		5.548E+02	5.558E+02	5.578E+02	5.650E+02	5.861E+02	6.674E+02	9.814E+02	5.294E+03
U-234		5.698E+03	5.704E+03	5.715E+03	5.756E+03	5.870E+03	6.248E+03	7.019E+03	5.846E+03
U-235		1.688E+02	1.689E+02	1.691E+02	1.696E+02	1.710E+02	1.759E+02	1.905E+02	2.564E+02
U-238		7.844E+02	7.848E+02	7.857E+02	7.889E+02	7.979E+02	8.302E+02	9.300E+02	1.404E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	0.000E+00	2.498E-02	1.001E+03	2.498E-02	1.001E+03
Np-237	1.000E+00	0.000E+00	5.056E-01	4.945E+01	5.056E-01	4.945E+01
Pu-239	1.000E+00	0.000E+00	1.615E-02	1.548E+03	1.615E-02	1.548E+03
Pu-240	1.000E+00	0.000E+00	1.613E-02	1.550E+03	1.613E-02	1.550E+03
Tc-99	1.000E+00	0.000E+00	4.506E-02	5.548E+02	4.506E-02	5.548E+02
U-234	1.000E+00	0.000E+00	4.388E-03	5.698E+03	4.388E-03	5.698E+03
U-235	1.000E+00	0.000E+00	1.481E-01	1.688E+02	1.481E-01	1.688E+02
U-238	1.000E+00	0.000E+00	3.187E-02	7.844E+02	3.187E-02	7.844E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.498E-02	2.493E-02	2.484E-02	2.450E-02	2.357E-02	2.056E-02	1.389E-02	3.354E-03
Np-237	Am-241	1.000E+00	7.916E-08	2.419E-07	5.644E-07	1.657E-06	4.482E-06	1.150E-05	1.711E-05	5.869E-06
Np-237	Np-237	1.000E+00	5.056E-01	5.029E-01	4.977E-01	4.797E-01	4.319E-01	2.988E-01	1.039E-01	2.382E-03
Np-237	ΣDOSE (j)		5.056E-01	5.029E-01	4.977E-01	4.797E-01	4.319E-01	2.988E-01	1.039E-01	2.388E-03
U-233	Am-241	1.000E+00	1.437E-15	8.741E-15	4.287E-14	3.615E-13	2.842E-12	2.524E-11	1.305E-10	2.280E-10
U-233	Np-237	1.000E+00	1.225E-08	3.272E-08	7.289E-08	2.095E-07	5.673E-07	1.500E-06	2.492E-06	1.374E-06
U-233	ΣDOSE (j)		1.225E-08	3.272E-08	7.289E-08	2.095E-07	5.673E-07	1.500E-06	2.492E-06	1.374E-06
Th-229	Am-241	1.000E+00	1.825E-18	2.704E-17	3.130E-16	8.179E-15	1.929E-13	6.102E-12	1.169E-10	1.574E-09
Th-229	Np-237	1.000E+00	2.242E-11	1.554E-10	8.161E-10	7.198E-09	5.849E-08	5.608E-07	3.618E-06	1.638E-05
Th-229	ΣDOSE (j)		2.242E-11	1.554E-10	8.161E-10	7.198E-09	5.849E-08	5.608E-07	3.618E-06	1.638E-05
Pu-239	Pu-239	1.000E+00	1.615E-02	1.614E-02	1.612E-02	1.606E-02	1.586E-02	1.517E-02	1.327E-02	7.288E-03
U-235	Pu-239	1.000E+00	7.284E-11	2.186E-10	5.098E-10	1.526E-09	4.404E-09	1.418E-08	3.972E-08	1.051E-07
U-235	U-235	1.000E+00	1.481E-01	1.480E-01	1.478E-01	1.473E-01	1.458E-01	1.407E-01	1.269E-01	8.826E-02
U-235	ΣDOSE (j)		1.481E-01	1.480E-01	1.478E-01	1.473E-01	1.458E-01	1.407E-01	1.269E-01	8.826E-02
Pa-231	Pu-239	1.000E+00	1.319E-15	9.510E-15	5.084E-14	4.553E-13	3.784E-12	3.874E-11	2.892E-10	1.365E-09
Pa-231	U-235	1.000E+00	4.099E-06	1.255E-05	2.944E-05	8.808E-05	2.516E-04	7.788E-04	1.923E-03	2.631E-03
Pa-231	ΣDOSE (j)		4.099E-06	1.255E-05	2.944E-05	8.808E-05	2.516E-04	7.788E-04	1.923E-03	2.631E-03
Ac-227	Pu-239	1.000E+00	1.418E-17	2.004E-16	2.236E-15	5.516E-14	1.154E-12	2.667E-11	3.240E-10	3.328E-09
Ac-227	U-235	1.000E+00	5.621E-08	3.723E-07	1.887E-06	1.550E-05	1.070E-04	6.682E-04	2.378E-03	6.628E-03
Ac-227	ΣDOSE (j)		5.621E-08	3.723E-07	1.887E-06	1.550E-05	1.070E-04	6.682E-04	2.378E-03	6.628E-03
Pu-240	Pu-240	4.950E-08	7.984E-10	7.978E-10	7.967E-10	7.928E-10	7.818E-10	7.439E-10	6.406E-10	3.329E-10
Pu-240	Pu-240	1.000E+00	1.613E-02	1.612E-02	1.609E-02	1.602E-02	1.579E-02	1.503E-02	1.294E-02	6.725E-03
Pu-240	ΣDOSE (j)		1.613E-02	1.612E-02	1.609E-02	1.602E-02	1.579E-02	1.503E-02	1.294E-02	6.725E-03
U-236	Pu-240	1.000E+00	5.903E-11	1.811E-10	4.251E-10	1.272E-09	3.635E-09	1.125E-08	2.781E-08	4.025E-08
Th-232	Pu-240	1.000E+00	4.919E-21	3.226E-20	1.653E-19	1.448E-18	1.200E-17	1.249E-16	9.909E-16	6.913E-15
Ra-228	Pu-240	1.000E+00	1.002E-20	1.488E-19	1.655E-18	3.655E-17	5.810E-16	8.679E-15	7.985E-14	6.742E-13
Th-228	Pu-240	1.000E+00	9.221E-22	2.616E-20	5.549E-19	2.533E-17	6.029E-16	1.066E-14	1.056E-13	9.966E-13
Tc-99	Tc-99	1.000E+00	4.506E-02	4.498E-02	4.482E-02	4.425E-02	4.265E-02	3.746E-02	2.547E-02	4.722E-03
U-234	U-234	1.000E+00	4.388E-03	4.383E-03	4.374E-03	4.343E-03	4.254E-03	3.952E-03	3.176E-03	1.250E-03
U-234	U-238	9.999E-01	6.218E-09	1.864E-08	4.340E-08	1.293E-07	3.678E-07	1.126E-06	2.706E-06	3.551E-06
U-234	ΣDOSE (j)		4.388E-03	4.383E-03	4.374E-03	4.343E-03	4.254E-03	3.953E-03	3.178E-03	1.254E-03
Th-230	U-234	1.000E+00	1.844E-08	5.270E-08	1.209E-07	3.582E-07	1.026E-06	3.243E-06	8.612E-06	1.824E-05
Th-230	U-238	9.999E-01	1.817E-14	1.191E-13	6.107E-13	5.352E-12	4.430E-11	4.583E-10	3.579E-09	2.378E-08
Th-230	ΣDOSE (j)		1.844E-08	5.270E-08	1.209E-07	3.582E-07	1.026E-06	3.243E-06	8.615E-06	1.826E-05

Summary : Hematite - Excavation Scenario - AF 50 m²

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.511E-09	1.065E-08	5.641E-08	5.041E-07	4.218E-06	4.450E-05	3.664E-04	2.954E-03
Ra-226	U-238	9.999E-01	1.066E-15	1.613E-14	1.888E-13	5.004E-12	1.214E-10	4.207E-09	1.027E-07	2.666E-06
Ra-226	ΣDOSE(j)		1.511E-09	1.065E-08	5.641E-08	5.041E-07	4.218E-06	4.450E-05	3.666E-04	2.957E-03
Pb-210	U-234	1.000E+00	1.520E-12	1.526E-11	1.299E-10	2.601E-09	4.964E-08	1.069E-06	1.123E-05	5.403E-05
Pb-210	U-238	9.999E-01	9.779E-19	2.023E-17	3.617E-16	2.054E-14	1.138E-12	8.530E-11	2.888E-09	4.738E-08
Pb-210	ΣDOSE(j)		1.520E-12	1.526E-11	1.299E-10	2.601E-09	4.964E-08	1.069E-06	1.124E-05	5.408E-05
U-238	U-238	5.400E-05	2.106E-07	2.104E-07	2.100E-07	2.085E-07	2.042E-07	1.896E-07	1.522E-07	5.928E-08
U-238	U-238	9.999E-01	3.187E-02	3.185E-02	3.182E-02	3.169E-02	3.133E-02	3.011E-02	2.688E-02	1.780E-02
U-238	ΣDOSE(j)		3.187E-02	3.185E-02	3.182E-02	3.169E-02	3.133E-02	3.011E-02	2.688E-02	1.780E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.839E-01	9.526E-01	8.506E-01	6.154E-01	1.982E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.229E-07	9.623E-07	3.136E-06	8.820E-06	2.353E-05	3.823E-05	1.902E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.149E-01	2.325E-01	7.733E-03
Np-237	ΣS(j):		1.000E+00	9.951E-01	9.855E-01	9.525E-01	8.643E-01	6.150E-01	2.326E-01	7.752E-03
U-233	Am-241	1.000E+00	0.000E+00	7.066E-13	6.330E-12	6.920E-11	5.946E-10	5.635E-09	3.290E-08	9.937E-08
U-233	Np-237	1.000E+00	0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.992E-04
U-233	ΣS(j):		0.000E+00	4.361E-06	1.301E-05	4.258E-05	1.211E-04	3.371E-04	6.295E-04	5.993E-04
Th-229	Am-241	1.000E+00	0.000E+00	2.225E-17	5.987E-16	2.190E-14	5.710E-13	1.874E-11	3.647E-10	5.072E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Th-229	ΣS(j):		0.000E+00	2.061E-10	1.848E-09	2.028E-08	1.761E-07	1.731E-06	1.131E-05	5.281E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.961E-01	9.870E-01	9.615E-01	8.772E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.846E-10	2.952E-09	9.818E-09	2.927E-08	9.544E-08	2.690E-07	7.232E-07
U-235	U-235	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
U-235	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.370E-14	1.039E-12	9.310E-12	1.017E-10	8.731E-10	8.235E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.342E-05	2.110E-04	6.292E-04	2.055E-03	5.816E-03	1.588E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.913E-15	1.021E-13	2.374E-12	5.715E-11	7.109E-10	7.753E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.030E-05	2.242E-04	1.440E-03	5.227E-03	1.545E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.940E-08	4.919E-08	4.848E-08	4.650E-08	4.020E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.994E-01	9.979E-01	9.938E-01	9.794E-01	9.395E-01	8.120E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.959E-08	8.871E-08	2.950E-07	8.787E-07	2.858E-06	7.991E-06	2.087E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.300E-19	6.567E-18	7.285E-17	6.526E-16	7.132E-15	6.126E-14	5.797E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.251E-19	2.222E-17	3.892E-16	6.056E-15	5.806E-14	5.711E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.164E-17	3.121E-16	5.709E-15	5.701E-14	5.683E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.988E-01	9.965E-01	9.885E-01	9.659E-01	8.907E-01	7.066E-01	3.142E-01
U-234	U-234	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.851E-01	9.512E-01	8.605E-01	6.060E-01
U-234	U-238	9.999E-01	0.000E+00	2.833E-06	8.492E-06	2.821E-05	8.378E-05	2.697E-04	7.321E-04	1.720E-03
U-234	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.775E-04	2.503E-03	7.040E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.147E-10	1.272E-09	1.137E-08	1.234E-07	1.039E-06	9.175E-06
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.979E-05	2.680E-04	8.777E-04	2.504E-03	7.049E-03

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.595E-04	1.425E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.969E-14	1.836E-12	4.921E-11	1.777E-09	4.462E-08	1.286E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.753E-08	1.944E-07	1.738E-06	1.889E-05	1.596E-04	1.427E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.340E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.422E-17	1.137E-15	1.343E-13	9.632E-12	8.277E-10	3.312E-08	1.174E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.325E-10	1.867E-08	4.349E-07	1.049E-05	1.293E-04	1.341E-03
U-238	U-238	5.400E-05	5.400E-05	5.397E-05	5.392E-05	5.373E-05	5.320E-05	5.138E-05	4.651E-05	3.282E-05
U-238	U-238	9.999E-01	9.999E-01	9.994E-01	9.985E-01	9.950E-01	9.851E-01	9.514E-01	8.612E-01	6.077E-01
U-238	ΣS(j):		1.000E+00	9.995E-01	9.985E-01	9.950E-01	9.852E-01	9.514E-01	8.612E-01	6.077E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.41 seconds

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Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.700E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Excavation Scenario - Ra-226+C

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.850E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.850E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.850E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.70 square meters	Pb-210	1.000E+00
Thickness:	0.90 meters	Ra-226	1.000E+00
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.371E-01	4.369E-01	4.365E-01	4.350E-01	4.310E-01	4.171E-01	3.797E-01	2.477E-01
M(t):	1.748E-02	1.747E-02	1.746E-02	1.740E-02	1.724E-02	1.668E-02	1.519E-02	9.907E-03

Maximum TDOSE(t): 4.371E-01 mrem/yr at t = 0.000E+00 years

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.574E-04	0.0006	6.536E-05	0.0001	0.000E+00	0.0000	3.238E-03	0.0074	1.577E-05	0.0000	2.069E-05	0.0000	1.729E-04	0.0004
Ra-226	4.221E-01	0.9656	2.561E-05	0.0001	0.000E+00	0.0000	1.115E-02	0.0255	1.016E-05	0.0000	2.961E-05	0.0001	3.457E-05	0.0001
Total	4.223E-01	0.9662	9.097E-05	0.0002	0.000E+00	0.0000	1.439E-02	0.0329	2.593E-05	0.0001	5.030E-05	0.0001	2.075E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.770E-03	0.0086
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.333E-01	0.9914
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.371E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.494E-04	0.0006	6.334E-05	0.0001	0.000E+00	0.0000	3.137E-03	0.0072	1.528E-05	0.0000	2.005E-05	0.0000	1.676E-04	0.0004
Ra-226	4.219E-01	0.9657	2.760E-05	0.0001	0.000E+00	0.0000	1.124E-02	0.0257	1.065E-05	0.0000	3.023E-05	0.0001	3.984E-05	0.0001
Total	4.221E-01	0.9662	9.094E-05	0.0002	0.000E+00	0.0000	1.438E-02	0.0329	2.593E-05	0.0001	5.028E-05	0.0001	2.074E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.652E-03	0.0084
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.332E-01	0.9916
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.369E-01	1.0000

*Sum of all water independent and dependent pathways.

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.343E-04	0.0005	5.950E-05	0.0001	0.000E+00	0.0000	2.942E-03	0.0067	1.435E-05	0.0000	1.883E-05	0.0000	1.574E-04	0.0004
Ra-226	4.215E-01	0.9657	3.139E-05	0.0001	0.000E+00	0.0000	1.140E-02	0.0261	1.155E-05	0.0000	3.139E-05	0.0001	4.990E-05	0.0001
Total	4.217E-01	0.9663	9.089E-05	0.0002	0.000E+00	0.0000	1.435E-02	0.0329	2.590E-05	0.0001	5.022E-05	0.0001	2.073E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.427E-03	0.0079
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.330E-01	0.9921
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.365E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.882E-04	0.0004	4.779E-05	0.0001	0.000E+00	0.0000	2.352E-03	0.0054	1.152E-05	0.0000	1.512E-05	0.0000	1.264E-04	0.0003
Ra-226	4.202E-01	0.9660	4.290E-05	0.0001	0.000E+00	0.0000	1.189E-02	0.0273	1.428E-05	0.0000	3.488E-05	0.0001	8.045E-05	0.0002
Total	4.204E-01	0.9664	9.069E-05	0.0002	0.000E+00	0.0000	1.424E-02	0.0327	2.580E-05	0.0001	5.000E-05	0.0001	2.069E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.741E-03	0.0063
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.323E-01	0.9937
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.350E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.006E-04	0.0002	2.555E-05	0.0001	0.000E+00	0.0000	1.241E-03	0.0029	6.153E-06	0.0000	8.075E-06	0.0000	6.759E-05	0.0002
Ra-226	4.166E-01	0.9666	6.449E-05	0.0001	0.000E+00	0.0000	1.269E-02	0.0294	1.935E-05	0.0000	4.128E-05	0.0001	1.379E-04	0.0003
Total	4.167E-01	0.9668	9.004E-05	0.0002	0.000E+00	0.0000	1.393E-02	0.0323	2.550E-05	0.0001	4.935E-05	0.0001	2.054E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.449E-03	0.0034
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.295E-01	0.9966
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.310E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.124E-05	0.0000	2.856E-06	0.0000	0.000E+00	0.0000	1.321E-04	0.0003	6.845E-07	0.0000	8.993E-07	0.0000	7.554E-06	0.0000
Ra-226	4.038E-01	0.9683	8.457E-05	0.0002	0.000E+00	0.0000	1.273E-02	0.0305	2.371E-05	0.0001	4.613E-05	0.0001	1.920E-04	0.0005
Total	4.039E-01	0.9683	8.743E-05	0.0002	0.000E+00	0.0000	1.287E-02	0.0308	2.439E-05	0.0001	4.703E-05	0.0001	1.995E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.553E-04	0.0004
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.169E-01	0.9996
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.171E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.147E-08	0.0000	5.452E-09	0.0000	0.000E+00	0.0000	2.161E-07	0.0000	1.290E-09	0.0000	1.700E-09	0.0000	1.442E-08	0.0000
Ra-226	3.693E-01	0.9726	7.997E-05	0.0002	0.000E+00	0.0000	1.008E-02	0.0266	2.135E-05	0.0001	4.079E-05	0.0001	1.825E-04	0.0005
Total	3.693E-01	0.9726	7.997E-05	0.0002	0.000E+00	0.0000	1.009E-02	0.0266	2.136E-05	0.0001	4.079E-05	0.0001	1.825E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.604E-07	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.797E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.797E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.291E-18	0.0000	1.657E-18	0.0000	0.000E+00	0.0000	2.736E-17	0.0000	3.742E-19	0.0000	4.986E-19	0.0000	4.384E-18	0.0000
Ra-226	2.444E-01	0.9867	5.850E-05	0.0002	0.000E+00	0.0000	3.072E-03	0.0124	1.317E-05	0.0001	2.414E-05	0.0001	1.335E-04	0.0005
Total	2.444E-01	0.9867	5.850E-05	0.0002	0.000E+00	0.0000	3.072E-03	0.0124	1.317E-05	0.0001	2.414E-05	0.0001	1.335E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.056E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.477E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.477E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	3.770E-03	3.652E-03	3.427E-03	2.741E-03	1.449E-03	1.553E-04	2.604E-07	4.056E-17
Ra-226+D	Ra-226+D	1.000E+00	4.332E-01	4.330E-01	4.326E-01	4.312E-01	4.272E-01	4.136E-01	3.769E-01	2.466E-01
Ra-226+D	Pb-210+D	1.000E+00	1.128E-04	2.328E-04	4.521E-04	1.115E-03	2.338E-03	3.373E-03	2.834E-03	1.059E-03
Ra-226+D	ΣDSR(j)		4.333E-01	4.332E-01	4.330E-01	4.323E-01	4.295E-01	4.169E-01	3.797E-01	2.477E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	6.630E+03	6.845E+03	7.296E+03	9.120E+03	1.726E+04	1.610E+05	9.600E+07	*7.634E+13	
Ra-226	5.770E+01	5.771E+01	5.773E+01	5.783E+01	5.820E+01	5.996E+01	6.584E+01	1.009E+02	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	3.770E-03	6.630E+03	3.770E-03	6.630E+03
Ra-226	1.000E+00	0.000E+00	4.333E-01	5.770E+01	4.333E-01	5.770E+01

Summary : Hematite - Excavation Scenario - Ra-226+C

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	3.770E-03	3.652E-03	3.427E-03	2.741E-03	1.449E-03	1.553E-04	2.604E-07	4.056E-17
Pb-210	Ra-226	1.000E+00	1.128E-04	2.328E-04	4.521E-04	1.115E-03	2.338E-03	3.373E-03	2.834E-03	1.059E-03
Pb-210	ΣDOSE(j)		3.883E-03	3.885E-03	3.879E-03	3.856E-03	3.786E-03	3.528E-03	2.834E-03	1.059E-03
Ra-226	Ra-226	1.000E+00	4.332E-01	4.330E-01	4.326E-01	4.312E-01	4.272E-01	4.136E-01	3.769E-01	2.466E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.692E-01	9.104E-01	7.312E-01	3.910E-01	4.369E-02	8.341E-05	2.536E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.059E-02	8.894E-02	2.663E-01	6.001E-01	9.192E-01	8.808E-01	6.444E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.993E-01	9.975E-01	9.910E-01	9.629E-01	8.809E-01	6.444E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.955E-01	9.867E-01	9.563E-01	8.746E-01	6.397E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.50 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.670E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.835E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.835E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.835E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	16.70 square meters	Pb-210	1.000E+00
Thickness:	0.90 meters	Ra-226	1.000E+00
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.694E+00	1.693E+00	1.691E+00	1.685E+00	1.668E+00	1.611E+00	1.457E+00	9.608E-01
M(t):	6.774E-02	6.771E-02	6.764E-02	6.741E-02	6.674E-02	6.443E-02	5.826E-02	3.843E-02

Maximum TDOSE(t): 1.694E+00 mrem/yr at t = 0.000E+00 years

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	8.874E-04	0.0005	8.443E-05	0.0000	0.000E+00	0.0000	3.181E-02	0.0188	1.549E-04	0.0001	2.032E-04	0.0001	1.698E-03	0.0010
Ra-226	1.548E+00	0.9143	3.309E-05	0.0000	0.000E+00	0.0000	1.095E-01	0.0647	9.981E-05	0.0001	2.909E-04	0.0002	3.396E-04	0.0002
Total	1.549E+00	0.9148	1.175E-04	0.0001	0.000E+00	0.0000	1.413E-01	0.0835	2.547E-04	0.0002	4.941E-04	0.0003	2.038E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.484E-02	0.0206
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.659E+00	0.9794
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.694E+00	1.0000

*Sum of all water independent and dependent pathways.

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	8.600E-04	0.0005	8.183E-05	0.0000	0.000E+00	0.0000	3.081E-02	0.0182	1.501E-04	0.0001	1.969E-04	0.0001	1.646E-03	0.0010
Ra-226	1.548E+00	0.9143	3.566E-05	0.0000	0.000E+00	0.0000	1.104E-01	0.0652	1.046E-04	0.0001	2.970E-04	0.0002	3.914E-04	0.0002
Total	1.549E+00	0.9149	1.175E-04	0.0001	0.000E+00	0.0000	1.412E-01	0.0834	2.547E-04	0.0002	4.939E-04	0.0003	2.037E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.375E-02	0.0199
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.659E+00	0.9801
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.693E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	8.078E-04	0.0005	7.686E-05	0.0000	0.000E+00	0.0000	2.890E-02	0.0171	1.410E-04	0.0001	1.850E-04	0.0001	1.546E-03	0.0009
Ra-226	1.546E+00	0.9145	4.055E-05	0.0000	0.000E+00	0.0000	1.120E-01	0.0662	1.135E-04	0.0001	3.083E-04	0.0002	4.902E-04	0.0003
Total	1.547E+00	0.9149	1.174E-04	0.0001	0.000E+00	0.0000	1.409E-01	0.0833	2.545E-04	0.0002	4.933E-04	0.0003	2.036E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.166E-02	0.0187
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.659E+00	0.9813
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.691E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.489E-04	0.0004	6.174E-05	0.0000	0.000E+00	0.0000	2.311E-02	0.0137	1.132E-04	0.0001	1.485E-04	0.0001	1.242E-03	0.0007
Ra-226	1.542E+00	0.9149	5.542E-05	0.0000	0.000E+00	0.0000	1.168E-01	0.0693	1.403E-04	0.0001	3.426E-04	0.0002	7.903E-04	0.0005
Total	1.542E+00	0.9153	1.172E-04	0.0001	0.000E+00	0.0000	1.399E-01	0.0830	2.535E-04	0.0002	4.912E-04	0.0003	2.032E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.532E-02	0.0150
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.660E+00	0.9850
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.685E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.469E-04	0.0002	3.301E-05	0.0000	0.000E+00	0.0000	1.219E-02	0.0073	6.044E-05	0.0000	7.933E-05	0.0000	6.640E-04	0.0004
Ra-226	1.528E+00	0.9161	8.331E-05	0.0000	0.000E+00	0.0000	1.247E-01	0.0747	1.901E-04	0.0001	4.055E-04	0.0002	1.354E-03	0.0008
Total	1.529E+00	0.9163	1.163E-04	0.0001	0.000E+00	0.0000	1.368E-01	0.0820	2.505E-04	0.0002	4.848E-04	0.0003	2.018E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.337E-02	0.0080
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.655E+00	0.9920
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.668E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.877E-05	0.0000	3.689E-06	0.0000	0.000E+00	0.0000	1.297E-03	0.0008	6.725E-06	0.0000	8.835E-06	0.0000	7.420E-05	0.0000
Ra-226	1.482E+00	0.9198	1.093E-04	0.0001	0.000E+00	0.0000	1.251E-01	0.0777	2.329E-04	0.0001	4.532E-04	0.0003	1.886E-03	0.0012
Total	1.482E+00	0.9198	1.129E-04	0.0001	0.000E+00	0.0000	1.264E-01	0.0785	2.396E-04	0.0001	4.620E-04	0.0003	1.960E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.430E-03	0.0009
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.609E+00	0.9991
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.611E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.402E-08	0.0000	7.043E-09	0.0000	0.000E+00	0.0000	2.123E-06	0.0000	1.267E-08	0.0000	1.670E-08	0.0000	1.417E-07	0.0000
Ra-226	1.355E+00	0.9303	1.033E-04	0.0001	0.000E+00	0.0000	9.907E-02	0.0680	2.098E-04	0.0001	4.007E-04	0.0003	1.793E-03	0.0012
Total	1.355E+00	0.9303	1.033E-04	0.0001	0.000E+00	0.0000	9.907E-02	0.0680	2.098E-04	0.0001	4.007E-04	0.0003	1.793E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.375E-06	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.457E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.457E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.216E-17	0.0000	2.141E-18	0.0000	0.000E+00	0.0000	2.687E-16	0.0000	3.676E-18	0.0000	4.898E-18	0.0000	4.307E-17	0.0000
Ra-226	9.289E-01	0.9668	7.557E-05	0.0001	0.000E+00	0.0000	3.018E-02	0.0314	1.294E-04	0.0001	2.371E-04	0.0002	1.312E-03	0.0014
Total	9.289E-01	0.9668	7.557E-05	0.0001	0.000E+00	0.0000	3.018E-02	0.0314	1.294E-04	0.0001	2.371E-04	0.0002	1.312E-03	0.0014

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.447E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.608E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.608E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	3.484E-02	3.375E-02	3.166E-02	2.532E-02	1.337E-02	1.430E-03	2.375E-06	3.447E-16
Ra-226+D	Ra-226+D	1.000E+00	1.658E+00	1.657E+00	1.655E+00	1.650E+00	1.633E+00	1.578E+00	1.431E+00	9.518E-01
Ra-226+D	Pb-210+D	1.000E+00	1.073E-03	2.186E-03	4.211E-03	1.033E-02	2.161E-02	3.108E-02	2.587E-02	9.018E-03
Ra-226+D	ΣDSR(j)		1.659E+00	1.659E+00	1.659E+00	1.660E+00	1.655E+00	1.609E+00	1.457E+00	9.608E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	7.175E+02	7.408E+02	7.896E+02	9.873E+02	1.870E+03	1.749E+04	1.053E+07	*7.634E+13	
Ra-226	1.507E+01	1.507E+01	1.507E+01	1.506E+01	1.511E+01	1.553E+01	1.716E+01	2.602E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	3.484E-02	7.175E+02	3.484E-02	7.175E+02
Ra-226	1.000E+00	8.78 ± 0.02	1.660E+00	1.506E+01	1.659E+00	1.507E+01

Summary : Hematite - Excavation Scenario - Ra-226+C

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	3.484E-02	3.375E-02	3.166E-02	2.532E-02	1.337E-02	1.430E-03	2.375E-06	3.447E-16
Pb-210	Ra-226	1.000E+00	1.073E-03	2.186E-03	4.211E-03	1.033E-02	2.161E-02	3.108E-02	2.587E-02	9.018E-03
Pb-210	ΣDOSE(j)		3.591E-02	3.593E-02	3.587E-02	3.565E-02	3.498E-02	3.251E-02	2.587E-02	9.018E-03
Ra-226	Ra-226	1.000E+00	1.658E+00	1.657E+00	1.655E+00	1.650E+00	1.633E+00	1.578E+00	1.431E+00	9.518E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.692E-01	9.104E-01	7.312E-01	3.910E-01	4.369E-02	8.341E-05	2.536E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.059E-02	8.894E-02	2.663E-01	6.001E-01	9.192E-01	8.808E-01	6.444E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.993E-01	9.975E-01	9.910E-01	9.629E-01	8.809E-01	6.444E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.955E-01	9.867E-01	9.563E-01	8.746E-01	6.397E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.50 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
Time = 1.000E+02	14
Time = 3.000E+02	15
Time = 1.000E+03	16
Dose/Source Ratios Summed Over All Pathways	17
Single Radionuclide Soil Guidelines	17
Dose Per Nuclide Summed Over All Pathways	18
Soil Concentration Per Nuclide	18

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.670E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.835E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.835E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.835E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	167.00 square meters	Pb-210	1.000E+00
Thickness:	0.90 meters	Ra-226	1.000E+00
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.766E+00	3.764E+00	3.759E+00	3.741E+00	3.690E+00	3.513E+00	3.048E+00	1.787E+00
M(t):	1.506E-01	1.505E-01	1.503E-01	1.496E-01	1.476E-01	1.405E-01	1.219E-01	7.150E-02

Maximum TDOSE(t): 3.766E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.285E-03	0.0003	1.090E-04	0.0000	0.000E+00	0.0000	3.181E-01	0.0845	1.549E-03	0.0004	2.032E-03	0.0005	1.698E-02	0.0045
Ra-226	2.323E+00	0.6169	4.270E-05	0.0000	0.000E+00	0.0000	1.095E+00	0.2908	9.981E-04	0.0003	2.909E-03	0.0008	3.396E-03	0.0009
Total	2.324E+00	0.6172	1.517E-04	0.0000	0.000E+00	0.0000	1.413E+00	0.3753	2.547E-03	0.0007	4.941E-03	0.0013	2.038E-02	0.0054

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.401E-01	0.0903
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.426E+00	0.9097
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.766E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.245E-03	0.0003	1.056E-04	0.0000	0.000E+00	0.0000	3.081E-01	0.0819	1.501E-03	0.0004	1.969E-03	0.0005	1.646E-02	0.0044
Ra-226	2.322E+00	0.6170	4.601E-05	0.0000	0.000E+00	0.0000	1.104E+00	0.2934	1.046E-03	0.0003	2.970E-03	0.0008	3.914E-03	0.0010
Total	2.323E+00	0.6173	1.516E-04	0.0000	0.000E+00	0.0000	1.412E+00	0.3752	2.547E-03	0.0007	4.939E-03	0.0013	2.037E-02	0.0054

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.294E-01	0.0875
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.434E+00	0.9125
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.764E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.170E-03	0.0003	9.919E-05	0.0000	0.000E+00	0.0000	2.890E-01	0.0769	1.410E-03	0.0004	1.850E-03	0.0005	1.546E-02	0.0041
Ra-226	2.320E+00	0.6173	5.233E-05	0.0000	0.000E+00	0.0000	1.120E+00	0.2981	1.135E-03	0.0003	3.083E-03	0.0008	4.902E-03	0.0013
Total	2.321E+00	0.6176	1.515E-04	0.0000	0.000E+00	0.0000	1.409E+00	0.3750	2.545E-03	0.0007	4.933E-03	0.0013	2.036E-02	0.0054

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.090E-01	0.0822
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.449E+00	0.9178
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.759E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.396E-04	0.0003	7.967E-05	0.0000	0.000E+00	0.0000	2.311E-01	0.0618	1.132E-03	0.0003	1.485E-03	0.0004	1.242E-02	0.0033
Ra-226	2.313E+00	0.6184	7.152E-05	0.0000	0.000E+00	0.0000	1.168E+00	0.3122	1.403E-03	0.0004	3.426E-03	0.0009	7.903E-03	0.0021
Total	2.314E+00	0.6186	1.512E-04	0.0000	0.000E+00	0.0000	1.399E+00	0.3739	2.535E-03	0.0007	4.912E-03	0.0013	2.032E-02	0.0054

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.471E-01	0.0661
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.494E+00	0.9339
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.741E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.024E-04	0.0001	4.260E-05	0.0000	0.000E+00	0.0000	1.219E-01	0.0330	6.044E-04	0.0002	7.933E-04	0.0002	6.640E-03	0.0018
Ra-226	2.293E+00	0.6215	1.075E-04	0.0000	0.000E+00	0.0000	1.247E+00	0.3379	1.901E-03	0.0005	4.055E-03	0.0011	1.354E-02	0.0037
Total	2.293E+00	0.6216	1.501E-04	0.0000	0.000E+00	0.0000	1.368E+00	0.3709	2.505E-03	0.0007	4.848E-03	0.0013	2.018E-02	0.0055

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.305E-01	0.0354
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.559E+00	0.9646
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.690E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.614E-05	0.0000	4.761E-06	0.0000	0.000E+00	0.0000	1.297E-02	0.0037	6.725E-05	0.0000	8.835E-05	0.0000	7.420E-04	0.0002
Ra-226	2.223E+00	0.6326	1.410E-04	0.0000	0.000E+00	0.0000	1.251E+00	0.3560	2.329E-03	0.0007	4.532E-03	0.0013	1.886E-02	0.0054
Total	2.223E+00	0.6327	1.458E-04	0.0000	0.000E+00	0.0000	1.264E+00	0.3597	2.396E-03	0.0007	4.620E-03	0.0013	1.960E-02	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.393E-02	0.0040
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.499E+00	0.9960
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.513E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.072E-07	0.0000	9.089E-09	0.0000	0.000E+00	0.0000	2.123E-05	0.0000	1.267E-07	0.0000	1.670E-07	0.0000	1.417E-06	0.0000
Ra-226	2.033E+00	0.6670	1.333E-04	0.0000	0.000E+00	0.0000	9.907E-01	0.3251	2.098E-03	0.0007	4.007E-03	0.0013	1.793E-02	0.0059
Total	2.033E+00	0.6670	1.333E-04	0.0000	0.000E+00	0.0000	9.907E-01	0.3251	2.098E-03	0.0007	4.007E-03	0.0013	1.793E-02	0.0059

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.305E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.048E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.048E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.279E-17	0.0000	2.763E-18	0.0000	0.000E+00	0.0000	2.687E-15	0.0000	3.676E-17	0.0000	4.898E-17	0.0000	4.307E-16	0.0000
Ra-226	1.469E+00	0.8217	9.753E-05	0.0001	0.000E+00	0.0000	3.018E-01	0.1688	1.294E-03	0.0007	2.371E-03	0.0013	1.312E-02	0.0073
Total	1.469E+00	0.8217	9.753E-05	0.0001	0.000E+00	0.0000	3.018E-01	0.1688	1.294E-03	0.0007	2.371E-03	0.0013	1.312E-02	0.0073

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.239E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.787E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.787E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	3.401E-01	3.294E-01	3.090E-01	2.471E-01	1.305E-01	1.393E-02	2.305E-05	3.239E-15
Ra-226+D	Ra-226+D	1.000E+00	3.415E+00	3.413E+00	3.408E+00	3.393E+00	3.348E+00	3.196E+00	2.796E+00	1.703E+00
Ra-226+D	Pb-210+D	1.000E+00	1.060E-02	2.147E-02	4.124E-02	1.009E-01	2.110E-01	3.030E-01	2.513E-01	8.482E-02
Ra-226+D	ΣDSR(j)		3.426E+00	3.434E+00	3.449E+00	3.494E+00	3.559E+00	3.499E+00	3.048E+00	1.787E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	7.351E+01	7.589E+01	8.090E+01	1.012E+02	1.916E+02	1.794E+03	1.084E+06	*7.634E+13	
Ra-226	7.298E+00	7.280E+00	7.247E+00	7.156E+00	7.024E+00	7.144E+00	8.203E+00	1.399E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	3.401E-01	7.351E+01	3.401E-01	7.351E+01
Ra-226	1.000E+00	45.46 ± 0.09	3.571E+00	7.002E+00	3.426E+00	7.298E+00

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	3.401E-01	3.294E-01	3.090E-01	2.471E-01	1.305E-01	1.393E-02	2.305E-05	3.239E-15
Pb-210	Ra-226	1.000E+00	1.060E-02	2.147E-02	4.124E-02	1.009E-01	2.110E-01	3.030E-01	2.513E-01	8.482E-02
Pb-210	ΣDOSE(j)		3.507E-01	3.509E-01	3.503E-01	3.481E-01	3.414E-01	3.170E-01	2.513E-01	8.482E-02
Ra-226	Ra-226	1.000E+00	3.415E+00	3.413E+00	3.408E+00	3.393E+00	3.348E+00	3.196E+00	2.796E+00	1.703E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.692E-01	9.104E-01	7.312E-01	3.910E-01	4.369E-02	8.341E-05	2.536E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.059E-02	8.894E-02	2.663E-01	6.001E-01	9.192E-01	8.808E-01	6.444E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.993E-01	9.975E-01	9.910E-01	9.629E-01	8.809E-01	6.444E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.955E-01	9.867E-01	9.563E-01	8.746E-01	6.397E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.17 seconds

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Time = 0.000E+00	9
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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Excavation Scenario - Ra-226+C

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.250E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.250E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.250E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Excavation Scenario - Ra-226+C

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Attachment 4 to HEM-11-91

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	5.00 square meters	Pb-210	1.000E+00
Thickness:	0.90 meters	Ra-226	1.000E+00
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	9.036E-01	9.032E-01	9.023E-01	8.993E-01	8.908E-01	8.615E-01	7.829E-01	5.149E-01
M(t):	3.614E-02	3.613E-02	3.609E-02	3.597E-02	3.563E-02	3.446E-02	3.131E-02	2.060E-02

Maximum TDOSE(t): 9.036E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.062E-04	0.0006	7.378E-05	0.0001	0.000E+00	0.0000	9.525E-03	0.0105	4.638E-05	0.0001	6.084E-05	0.0001	5.085E-04	0.0006
Ra-226	8.598E-01	0.9516	2.891E-05	0.0000	0.000E+00	0.0000	3.279E-02	0.0363	2.988E-05	0.0000	8.710E-05	0.0001	1.017E-04	0.0001
Total	8.603E-01	0.9521	1.027E-04	0.0001	0.000E+00	0.0000	4.231E-02	0.0468	7.626E-05	0.0001	1.479E-04	0.0002	6.102E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.072E-02	0.0119
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.929E-01	0.9881
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.036E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.906E-04	0.0005	7.151E-05	0.0001	0.000E+00	0.0000	9.225E-03	0.0102	4.495E-05	0.0000	5.896E-05	0.0001	4.928E-04	0.0005
Ra-226	8.595E-01	0.9516	3.116E-05	0.0000	0.000E+00	0.0000	3.306E-02	0.0366	3.132E-05	0.0000	8.892E-05	0.0001	1.172E-04	0.0001
Total	8.600E-01	0.9521	1.027E-04	0.0001	0.000E+00	0.0000	4.228E-02	0.0468	7.626E-05	0.0001	1.479E-04	0.0002	6.100E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.038E-02	0.0115
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.928E-01	0.9885
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.032E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.608E-04	0.0005	6.717E-05	0.0001	0.000E+00	0.0000	8.654E-03	0.0096	4.221E-05	0.0000	5.538E-05	0.0001	4.629E-04	0.0005
Ra-226	8.587E-01	0.9517	3.544E-05	0.0000	0.000E+00	0.0000	3.354E-02	0.0372	3.397E-05	0.0000	9.232E-05	0.0001	1.468E-04	0.0002
Total	8.592E-01	0.9522	1.026E-04	0.0001	0.000E+00	0.0000	4.219E-02	0.0468	7.618E-05	0.0001	1.477E-04	0.0002	6.097E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.742E-03	0.0108
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.926E-01	0.9892
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.023E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.701E-04	0.0004	5.395E-05	0.0001	0.000E+00	0.0000	6.918E-03	0.0077	3.389E-05	0.0000	4.446E-05	0.0000	3.718E-04	0.0004
Ra-226	8.561E-01	0.9520	4.843E-05	0.0001	0.000E+00	0.0000	3.496E-02	0.0389	4.200E-05	0.0000	1.026E-04	0.0001	2.366E-04	0.0003
Total	8.565E-01	0.9524	1.024E-04	0.0001	0.000E+00	0.0000	4.188E-02	0.0466	7.589E-05	0.0001	1.471E-04	0.0002	6.084E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.792E-03	0.0087
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.915E-01	0.9913
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.993E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.979E-04	0.0002	2.884E-05	0.0000	0.000E+00	0.0000	3.649E-03	0.0041	1.810E-05	0.0000	2.375E-05	0.0000	1.988E-04	0.0002
Ra-226	8.487E-01	0.9527	7.280E-05	0.0001	0.000E+00	0.0000	3.732E-02	0.0419	5.692E-05	0.0001	1.214E-04	0.0001	4.054E-04	0.0005
Total	8.489E-01	0.9530	1.016E-04	0.0001	0.000E+00	0.0000	4.097E-02	0.0460	7.501E-05	0.0001	1.452E-04	0.0002	6.042E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.117E-03	0.0046
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.867E-01	0.9954
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.908E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.212E-05	0.0000	3.224E-06	0.0000	0.000E+00	0.0000	3.884E-04	0.0005	2.013E-06	0.0000	2.645E-06	0.0000	2.222E-05	0.0000
Ra-226	8.227E-01	0.9550	9.547E-05	0.0001	0.000E+00	0.0000	3.745E-02	0.0435	6.973E-05	0.0001	1.357E-04	0.0002	5.647E-04	0.0007
Total	8.228E-01	0.9550	9.870E-05	0.0001	0.000E+00	0.0000	3.784E-02	0.0439	7.174E-05	0.0001	1.383E-04	0.0002	5.869E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.406E-04	0.0005
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.610E-01	0.9995
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.615E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.222E-08	0.0000	6.154E-09	0.0000	0.000E+00	0.0000	6.356E-07	0.0000	3.794E-09	0.0000	5.000E-09	0.0000	4.241E-08	0.0000
Ra-226	7.524E-01	0.9611	9.028E-05	0.0001	0.000E+00	0.0000	2.966E-02	0.0379	6.281E-05	0.0001	1.200E-04	0.0002	5.368E-04	0.0007
Total	7.524E-01	0.9611	9.028E-05	0.0001	0.000E+00	0.0000	2.966E-02	0.0379	6.281E-05	0.0001	1.200E-04	0.0002	5.369E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.351E-07	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.829E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.829E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.249E-17	0.0000	1.871E-18	0.0000	0.000E+00	0.0000	8.046E-17	0.0000	1.100E-18	0.0000	1.467E-18	0.0000	1.289E-17	0.0000
Ra-226	5.053E-01	0.9813	6.604E-05	0.0001	0.000E+00	0.0000	9.036E-03	0.0175	3.875E-05	0.0001	7.099E-05	0.0001	3.927E-04	0.0008
Total	5.053E-01	0.9813	6.604E-05	0.0001	0.000E+00	0.0000	9.036E-03	0.0175	3.875E-05	0.0001	7.099E-05	0.0001	3.927E-04	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.103E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.149E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.149E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.072E-02	1.038E-02	9.742E-03	7.792E-03	4.117E-03	4.406E-04	7.351E-07	1.103E-16
Ra-226+D	Ra-226+D	1.000E+00	8.925E-01	8.921E-01	8.913E-01	8.884E-01	8.800E-01	8.515E-01	7.749E-01	5.120E-01
Ra-226+D	Pb-210+D	1.000E+00	3.259E-04	6.677E-04	1.291E-03	3.174E-03	6.648E-03	9.575E-03	8.004E-03	2.883E-03
Ra-226+D	ΣDSR(j)		8.929E-01	8.928E-01	8.926E-01	8.915E-01	8.867E-01	8.610E-01	7.829E-01	5.149E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	2.332E+03	2.408E+03	2.566E+03	3.208E+03	6.073E+03	5.674E+04	3.401E+07	*7.634E+13	
Ra-226	2.800E+01	2.800E+01	2.801E+01	2.804E+01	2.820E+01	2.903E+01	3.193E+01	4.855E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.072E-02	2.332E+03	1.072E-02	2.332E+03
Ra-226	1.000E+00	0.000E+00	8.929E-01	2.800E+01	8.929E-01	2.800E+01

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.072E-02	1.038E-02	9.742E-03	7.792E-03	4.117E-03	4.406E-04	7.351E-07	1.103E-16
Pb-210	Ra-226	1.000E+00	3.259E-04	6.677E-04	1.291E-03	3.174E-03	6.648E-03	9.575E-03	8.004E-03	2.883E-03
Pb-210	ΣDOSE(j)		1.105E-02	1.105E-02	1.103E-02	1.097E-02	1.076E-02	1.002E-02	8.005E-03	2.883E-03
Ra-226	Ra-226	1.000E+00	8.925E-01	8.921E-01	8.913E-01	8.884E-01	8.800E-01	8.515E-01	7.749E-01	5.120E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.692E-01	9.104E-01	7.312E-01	3.910E-01	4.369E-02	8.341E-05	2.536E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.059E-02	8.894E-02	2.663E-01	6.001E-01	9.192E-01	8.808E-01	6.444E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.993E-01	9.975E-01	9.910E-01	9.629E-01	8.809E-01	6.444E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.955E-01	9.867E-01	9.563E-01	8.746E-01	6.397E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.49 seconds

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Total Dose Components	
Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
Time = 1.000E+02	14
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Summary : Hematite - Excavation Scenario - Ra-226+C

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.229E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.250E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.250E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.250E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Summary : Hematite - Excavation Scenario - Ra-226+C

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Excavation Scenario - Ra-226+C

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Attachment 4 to HEM-11-91

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	50.00 square meters	Pb-210	1.000E+00
Thickness:	0.90 meters	Ra-226	1.000E+00
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.460E+00	2.459E+00	2.456E+00	2.447E+00	2.420E+00	2.327E+00	2.078E+00	1.350E+00
M(t):	9.841E-02	9.836E-02	9.825E-02	9.787E-02	9.679E-02	9.306E-02	8.312E-02	5.401E-02

Maximum TDOSE(t): 2.460E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.138E-03	0.0005	9.538E-05	0.0000	0.000E+00	0.0000	9.525E-02	0.0387	4.638E-04	0.0002	6.084E-04	0.0002	5.085E-03	0.0021
Ra-226	2.028E+00	0.8241	3.738E-05	0.0000	0.000E+00	0.0000	3.279E-01	0.1333	2.988E-04	0.0001	8.710E-04	0.0004	1.017E-03	0.0004
Total	2.029E+00	0.8246	1.328E-04	0.0001	0.000E+00	0.0000	4.231E-01	0.1720	7.626E-04	0.0003	1.479E-03	0.0006	6.102E-03	0.0025

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.026E-01	0.0417
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.358E+00	0.9583
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.460E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.103E-03	0.0004	9.244E-05	0.0000	0.000E+00	0.0000	9.225E-02	0.0375	4.495E-04	0.0002	5.896E-04	0.0002	4.928E-03	0.0020
Ra-226	2.027E+00	0.8242	4.028E-05	0.0000	0.000E+00	0.0000	3.306E-01	0.1344	3.132E-04	0.0001	8.892E-04	0.0004	1.172E-03	0.0005
Total	2.028E+00	0.8246	1.327E-04	0.0001	0.000E+00	0.0000	4.228E-01	0.1720	7.626E-04	0.0003	1.479E-03	0.0006	6.100E-03	0.0025

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.941E-02	0.0404
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.360E+00	0.9596
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.459E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.036E-03	0.0004	8.683E-05	0.0000	0.000E+00	0.0000	8.654E-02	0.0352	4.221E-04	0.0002	5.538E-04	0.0002	4.629E-03	0.0019
Ra-226	2.025E+00	0.8244	4.581E-05	0.0000	0.000E+00	0.0000	3.354E-01	0.1365	3.397E-04	0.0001	9.232E-04	0.0004	1.468E-03	0.0006
Total	2.026E+00	0.8248	1.326E-04	0.0001	0.000E+00	0.0000	4.219E-01	0.1718	7.618E-04	0.0003	1.477E-03	0.0006	6.097E-03	0.0025

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.326E-02	0.0380
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.363E+00	0.9620
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.456E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	8.319E-04	0.0003	6.974E-05	0.0000	0.000E+00	0.0000	6.918E-02	0.0283	3.389E-04	0.0001	4.446E-04	0.0002	3.718E-03	0.0015
Ra-226	2.019E+00	0.8251	6.260E-05	0.0000	0.000E+00	0.0000	3.496E-01	0.1429	4.200E-04	0.0002	1.026E-03	0.0004	2.366E-03	0.0010
Total	2.020E+00	0.8254	1.323E-04	0.0001	0.000E+00	0.0000	4.188E-01	0.1711	7.589E-04	0.0003	1.471E-03	0.0006	6.084E-03	0.0025

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.459E-02	0.0305
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.372E+00	0.9695
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.447E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.448E-04	0.0002	3.729E-05	0.0000	0.000E+00	0.0000	3.649E-02	0.0151	1.810E-04	0.0001	2.375E-04	0.0001	1.988E-03	0.0008
Ra-226	2.001E+00	0.8270	9.411E-05	0.0000	0.000E+00	0.0000	3.732E-01	0.1542	5.692E-04	0.0002	1.214E-03	0.0005	4.054E-03	0.0017
Total	2.002E+00	0.8272	1.314E-04	0.0001	0.000E+00	0.0000	4.097E-01	0.1693	7.501E-04	0.0003	1.452E-03	0.0006	6.042E-03	0.0025

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.938E-02	0.0163
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.380E+00	0.9837
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.420E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.971E-05	0.0000	4.167E-06	0.0000	0.000E+00	0.0000	3.884E-03	0.0017	2.013E-05	0.0000	2.645E-05	0.0000	2.222E-04	0.0001
Ra-226	1.940E+00	0.8339	1.234E-04	0.0001	0.000E+00	0.0000	3.745E-01	0.1610	6.973E-04	0.0003	1.357E-03	0.0006	5.647E-03	0.0024
Total	1.940E+00	0.8339	1.276E-04	0.0001	0.000E+00	0.0000	3.784E-01	0.1626	7.174E-04	0.0003	1.383E-03	0.0006	5.869E-03	0.0025

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.207E-03	0.0018
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.322E+00	0.9982
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.327E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.490E-08	0.0000	7.956E-09	0.0000	0.000E+00	0.0000	6.356E-06	0.0000	3.794E-08	0.0000	5.000E-08	0.0000	4.241E-07	0.0000
Ra-226	1.774E+00	0.8537	1.167E-04	0.0001	0.000E+00	0.0000	2.966E-01	0.1427	6.281E-04	0.0003	1.200E-03	0.0006	5.368E-03	0.0026
Total	1.774E+00	0.8537	1.167E-04	0.0001	0.000E+00	0.0000	2.966E-01	0.1427	6.281E-04	0.0003	1.200E-03	0.0006	5.369E-03	0.0026

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.970E-06	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.078E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.078E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.879E-17	0.0000	2.419E-18	0.0000	0.000E+00	0.0000	8.046E-16	0.0000	1.100E-17	0.0000	1.467E-17	0.0000	1.289E-16	0.0000
Ra-226	1.255E+00	0.9293	8.537E-05	0.0001	0.000E+00	0.0000	9.036E-02	0.0669	3.875E-04	0.0003	7.099E-04	0.0005	3.927E-03	0.0029
Total	1.255E+00	0.9293	8.537E-05	0.0001	0.000E+00	0.0000	9.036E-02	0.0669	3.875E-04	0.0003	7.099E-04	0.0005	3.927E-03	0.0029

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.904E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.350E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.350E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.026E-01	9.941E-02	9.326E-02	7.459E-02	3.938E-02	4.207E-03	6.970E-06	9.904E-16
Ra-226+D	Ra-226+D	1.000E+00	2.354E+00	2.353E+00	2.351E+00	2.342E+00	2.317E+00	2.231E+00	2.002E+00	1.324E+00
Ra-226+D	Pb-210+D	1.000E+00	3.187E-03	6.466E-03	1.243E-02	3.045E-02	6.367E-02	9.149E-02	7.596E-02	2.593E-02
Ra-226+D	ΣDSR(j)		2.358E+00	2.360E+00	2.363E+00	2.372E+00	2.380E+00	2.322E+00	2.078E+00	1.350E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	2.436E+02	2.515E+02	2.681E+02	3.352E+02	6.348E+02	5.943E+03	3.587E+06	*7.634E+13	
Ra-226	1.060E+01	1.059E+01	1.058E+01	1.054E+01	1.050E+01	1.077E+01	1.203E+01	1.851E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.026E-01	2.436E+02	1.026E-01	2.436E+02
Ra-226	1.000E+00	27.75 ± 0.06	2.380E+00	1.050E+01	2.358E+00	1.060E+01

Summary : Hematite - Excavation Scenario - Ra-226+C

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.026E-01	9.941E-02	9.326E-02	7.459E-02	3.938E-02	4.207E-03	6.970E-06	9.904E-16
Pb-210	Ra-226	1.000E+00	3.187E-03	6.466E-03	1.243E-02	3.045E-02	6.367E-02	9.149E-02	7.596E-02	2.593E-02
Pb-210	ΣDOSE(j)		1.058E-01	1.059E-01	1.057E-01	1.050E-01	1.030E-01	9.569E-02	7.597E-02	2.593E-02
Ra-226	Ra-226	1.000E+00	2.354E+00	2.353E+00	2.351E+00	2.342E+00	2.317E+00	2.231E+00	2.002E+00	1.324E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.692E-01	9.104E-01	7.312E-01	3.910E-01	4.369E-02	8.341E-05	2.536E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.059E-02	8.894E-02	2.663E-01	6.001E-01	9.192E-01	8.808E-01	6.444E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.993E-01	9.975E-01	9.910E-01	9.629E-01	8.809E-01	6.444E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.955E-01	9.867E-01	9.563E-01	8.746E-01	6.397E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.83 seconds

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Time = 3.000E+00	11
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Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.700E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.850E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.850E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.850E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.70 square meters	Ra-228	1.000E+00
Thickness:	0.90 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.236E-01	6.236E-01	6.236E-01	6.235E-01	6.233E-01	6.226E-01	6.206E-01	5.535E-01
M(t):	2.495E-02	2.495E-02	2.494E-02	2.494E-02	2.493E-02	2.491E-02	2.483E-02	2.214E-02

Maximum TDOSE(t): 6.236E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.728E-01	0.4374	1.665E-04	0.0003	0.000E+00	0.0000	1.144E-02	0.0183	1.019E-05	0.0000	3.005E-05	0.0000	3.581E-05	0.0001
Th-228	3.169E-01	0.5081	8.291E-04	0.0013	0.000E+00	0.0000	7.612E-05	0.0001	1.714E-07	0.0000	3.021E-08	0.0000	1.637E-05	0.0000
Th-232	1.565E-02	0.0251	4.701E-03	0.0075	0.000E+00	0.0000	9.668E-04	0.0016	1.158E-06	0.0000	1.706E-06	0.0000	6.803E-05	0.0001
Total	6.053E-01	0.9706	5.696E-03	0.0091	0.000E+00	0.0000	1.249E-02	0.0200	1.152E-05	0.0000	3.178E-05	0.0001	1.202E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.845E-01	0.4562
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.178E-01	0.5095
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.139E-02	0.0343
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.236E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.322E-01	0.5327	3.842E-04	0.0006	0.000E+00	0.0000	1.016E-02	0.0163	9.084E-06	0.0000	2.663E-05	0.0000	3.641E-05	0.0001
Th-228	2.206E-01	0.3537	5.771E-04	0.0009	0.000E+00	0.0000	5.295E-05	0.0001	1.193E-07	0.0000	2.103E-08	0.0000	1.139E-05	0.0000
Th-232	5.253E-02	0.0842	4.735E-03	0.0076	0.000E+00	0.0000	2.263E-03	0.0036	2.304E-06	0.0000	5.093E-06	0.0000	7.240E-05	0.0001
Total	6.053E-01	0.9706	5.696E-03	0.0091	0.000E+00	0.0000	1.248E-02	0.0200	1.151E-05	0.0000	3.175E-05	0.0001	1.202E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.428E-01	0.5497
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.212E-01	0.3547
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.961E-02	0.0956
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.236E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.606E-01	0.5783	5.624E-04	0.0009	0.000E+00	0.0000	8.000E-03	0.0128	7.185E-06	0.0000	2.092E-05	0.0000	3.375E-05	0.0001
Th-228	1.069E-01	0.1714	2.796E-04	0.0004	0.000E+00	0.0000	2.562E-05	0.0000	5.779E-08	0.0000	1.019E-08	0.0000	5.520E-06	0.0000
Th-232	1.378E-01	0.2210	4.854E-03	0.0078	0.000E+00	0.0000	4.438E-03	0.0071	4.255E-06	0.0000	1.079E-05	0.0000	8.093E-05	0.0001
Total	6.053E-01	0.9706	5.696E-03	0.0091	0.000E+00	0.0000	1.246E-02	0.0200	1.150E-05	0.0000	3.172E-05	0.0001	1.202E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.692E-01	0.5921
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.072E-01	0.1719
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.472E-01	0.2361
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.236E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.113E-01	0.3388	3.889E-04	0.0006	0.000E+00	0.0000	3.438E-03	0.0055	3.111E-06	0.0000	8.976E-06	0.0000	1.742E-05	0.0000
Th-228	8.459E-03	0.0136	2.214E-05	0.0000	0.000E+00	0.0000	2.019E-06	0.0000	4.574E-09	0.0000	8.064E-10	0.0000	4.370E-07	0.0000
Th-232	3.855E-01	0.6183	5.285E-03	0.0085	0.000E+00	0.0000	8.966E-03	0.0144	8.349E-06	0.0000	2.266E-05	0.0000	1.023E-04	0.0002
Total	6.053E-01	0.9707	5.696E-03	0.0091	0.000E+00	0.0000	1.241E-02	0.0199	1.146E-05	0.0000	3.163E-05	0.0001	1.202E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.151E-01	0.3450
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.484E-03	0.0136
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.999E-01	0.6414
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.235E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.008E-02	0.0322	3.784E-05	0.0001	0.000E+00	0.0000	3.045E-04	0.0005	2.772E-07	0.0000	7.989E-07	0.0000	1.621E-06	0.0000
Th-228	6.029E-06	0.0000	1.578E-08	0.0000	0.000E+00	0.0000	1.420E-09	0.0000	3.259E-12	0.0000	5.746E-13	0.0000	3.115E-10	0.0000
Th-232	5.851E-01	0.9387	5.658E-03	0.0091	0.000E+00	0.0000	1.193E-02	0.0191	1.109E-05	0.0000	3.058E-05	0.0000	1.186E-04	0.0002
Total	6.052E-01	0.9710	5.696E-03	0.0091	0.000E+00	0.0000	1.224E-02	0.0196	1.137E-05	0.0000	3.138E-05	0.0001	1.202E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-02	0.0328
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.047E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.029E-01	0.9672
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.343E-06	0.0000	8.186E-09	0.0000	0.000E+00	0.0000	6.270E-08	0.0000	5.811E-11	0.0000	1.679E-10	0.0000	3.505E-10	0.0000
Th-228	5.829E-17	0.0000	1.525E-19	0.0000	0.000E+00	0.0000	1.307E-20	0.0000	3.147E-23	0.0000	5.550E-24	0.0000	3.011E-21	0.0000
Th-232	6.051E-01	0.9719	5.695E-03	0.0091	0.000E+00	0.0000	1.165E-02	0.0187	1.104E-05	0.0000	3.050E-05	0.0000	1.202E-04	0.0002
Total	6.051E-01	0.9719	5.695E-03	0.0091	0.000E+00	0.0000	1.165E-02	0.0187	1.104E-05	0.0000	3.050E-05	0.0000	1.202E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.415E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.846E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.226E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.226E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.465E-16	0.0000	2.762E-19	0.0000	0.000E+00	0.0000	1.814E-18	0.0000	1.784E-21	0.0000	5.196E-21	0.0000	1.183E-20	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	6.048E-01	0.9745	5.693E-03	0.0092	0.000E+00	0.0000	9.984E-03	0.0161	1.010E-05	0.0000	2.799E-05	0.0000	1.201E-04	0.0002
Total	6.048E-01	0.9745	5.693E-03	0.0092	0.000E+00	0.0000	9.984E-03	0.0161	1.010E-05	0.0000	2.799E-05	0.0000	1.201E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.486E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.206E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.206E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m^2

June 21, 2011

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	5.435E-01	0.9820	5.686E-03	0.0103	0.000E+00	0.0000	4.153E-03	0.0075	6.804E-06	0.0000	1.922E-05	0.0000	1.200E-04	0.0002
Total	5.435E-01	0.9820	5.686E-03	0.0103	0.000E+00	0.0000	4.153E-03	0.0075	6.804E-06	0.0000	1.922E-05	0.0000	1.200E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.535E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.535E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	2.258E-01	2.002E-01	1.573E-01	6.762E-02	6.061E-03	1.307E-06	4.382E-17	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	5.865E-02	1.427E-01	2.120E-01	1.475E-01	1.436E-02	3.107E-06	1.048E-16	0.000E+00
Ra-228+D	ΣDSR(j)		2.845E-01	3.428E-01	3.692E-01	2.151E-01	2.042E-02	4.415E-06	1.486E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.178E-01	2.212E-01	1.072E-01	8.484E-03	6.047E-06	5.846E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	5.090E-03	5.090E-03	5.089E-03	5.088E-03	5.084E-03	5.069E-03	5.026E-03	4.876E-03
Th-232	Ra-228+D	1.000E+00	1.384E-02	3.948E-02	8.236E-02	1.720E-01	2.333E-01	2.388E-01	2.371E-01	2.112E-01
Th-232	Th-228+D	1.000E+00	2.454E-03	1.504E-02	5.976E-02	2.229E-01	3.645E-01	3.788E-01	3.785E-01	3.373E-01
Th-232	ΣDSR(j)		2.139E-02	5.961E-02	1.472E-01	3.999E-01	6.029E-01	6.226E-01	6.206E-01	5.535E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	8.788E+01	7.292E+01	6.771E+01	1.162E+02	1.224E+03	5.663E+06	*2.726E+14	*2.726E+14	
Th-228	7.867E+01	1.130E+02	2.333E+02	2.947E+03	4.134E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.169E+03	4.194E+02	1.698E+02	6.251E+01	4.147E+01	4.015E+01	4.028E+01	4.517E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.614 ± 0.005	3.704E-01	6.750E+01	2.845E-01	8.788E+01
Th-228	1.000E+00	0.000E+00	3.178E-01	7.867E+01	3.178E-01	7.867E+01
Th-232	1.000E+00	75.9 ± 0.2	6.228E-01	4.014E+01	2.139E-02	1.169E+03

Summary : Hematite - Excavation Scenario - Th-232+C - AF 1.7 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	2.258E-01	2.002E-01	1.573E-01	6.762E-02	6.061E-03	1.307E-06	4.382E-17	0.000E+00
Ra-228	Th-232	1.000E+00	1.384E-02	3.948E-02	8.236E-02	1.720E-01	2.333E-01	2.388E-01	2.371E-01	2.112E-01
Ra-228	ΣDOSE(j)		2.397E-01	2.397E-01	2.396E-01	2.396E-01	2.394E-01	2.388E-01	2.371E-01	2.112E-01
Th-228	Ra-228	1.000E+00	5.865E-02	1.427E-01	2.120E-01	1.475E-01	1.436E-02	3.107E-06	1.048E-16	0.000E+00
Th-228	Th-228	1.000E+00	3.178E-01	2.212E-01	1.072E-01	8.484E-03	6.047E-06	5.846E-17	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	2.454E-03	1.504E-02	5.976E-02	2.229E-01	3.645E-01	3.788E-01	3.785E-01	3.373E-01
Th-228	ΣDOSE(j)		3.789E-01	3.789E-01	3.789E-01	3.789E-01	3.788E-01	3.788E-01	3.785E-01	3.373E-01
Th-232	Th-232	1.000E+00	5.090E-03	5.090E-03	5.089E-03	5.088E-03	5.084E-03	5.069E-03	5.026E-03	4.876E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.809E-06	1.960E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.997E-01	9.994E-01	9.981E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01	9.981E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.706E-06	2.938E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.997E-01	9.994E-01	9.981E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01	9.981E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.982E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.61 seconds

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Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.670E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.835E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.835E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.835E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	16.70 square meters	Ra-228	1.000E+00
Thickness:	0.90 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.362E+00	2.362E+00	2.362E+00	2.361E+00	2.359E+00	2.353E+00	2.336E+00	2.120E+00
M(t):	9.449E-02	9.449E-02	9.448E-02	9.445E-02	9.438E-02	9.413E-02	9.343E-02	8.481E-02

Maximum TDOSE(t): 2.362E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.994E-01	0.4231	2.152E-04	0.0001	0.000E+00	0.0000	1.124E-01	0.0476	1.001E-04	0.0000	2.952E-04	0.0001	3.517E-04	0.0001
Th-228	1.174E+00	0.4970	1.071E-03	0.0005	0.000E+00	0.0000	7.478E-04	0.0003	1.683E-06	0.0000	2.968E-07	0.0000	1.608E-04	0.0001
Th-232	5.727E-02	0.0242	6.073E-03	0.0026	0.000E+00	0.0000	9.497E-03	0.0040	1.138E-05	0.0000	1.676E-05	0.0000	6.683E-04	0.0003
Total	2.231E+00	0.9443	7.359E-03	0.0031	0.000E+00	0.0000	1.227E-01	0.0519	1.131E-04	0.0000	3.122E-04	0.0001	1.181E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.113E+00	0.4711
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.176E+00	0.4978
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.353E-02	0.0311
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.362E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.221E+00	0.5168	4.963E-04	0.0002	0.000E+00	0.0000	9.986E-02	0.0423	8.923E-05	0.0000	2.616E-04	0.0001	3.577E-04	0.0002
Th-228	8.171E-01	0.3459	7.455E-04	0.0003	0.000E+00	0.0000	5.202E-04	0.0002	1.172E-06	0.0000	2.066E-07	0.0000	1.119E-04	0.0000
Th-232	1.926E-01	0.0816	6.117E-03	0.0026	0.000E+00	0.0000	2.223E-02	0.0094	2.264E-05	0.0000	5.003E-05	0.0000	7.112E-04	0.0003
Total	2.231E+00	0.9443	7.359E-03	0.0031	0.000E+00	0.0000	1.226E-01	0.0519	1.130E-04	0.0000	3.119E-04	0.0001	1.181E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.322E+00	0.5596
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.185E-01	0.3465
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.218E-01	0.0939
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.362E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.328E+00	0.5623	7.266E-04	0.0003	0.000E+00	0.0000	7.859E-02	0.0333	7.058E-05	0.0000	2.055E-04	0.0001	3.316E-04	0.0001
Th-228	3.959E-01	0.1676	3.612E-04	0.0002	0.000E+00	0.0000	2.517E-04	0.0001	5.677E-07	0.0000	1.001E-07	0.0000	5.423E-05	0.0000
Th-232	5.065E-01	0.2144	6.271E-03	0.0027	0.000E+00	0.0000	4.360E-02	0.0185	4.180E-05	0.0000	1.060E-04	0.0000	7.950E-04	0.0003
Total	2.231E+00	0.9444	7.359E-03	0.0031	0.000E+00	0.0000	1.224E-01	0.0518	1.129E-04	0.0000	3.116E-04	0.0001	1.181E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.408E+00	0.5961
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.966E-01	0.1679
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.573E-01	0.2359
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.362E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.793E-01	0.3300	5.024E-04	0.0002	0.000E+00	0.0000	3.377E-02	0.0143	3.056E-05	0.0000	8.818E-05	0.0000	1.711E-04	0.0001
Th-228	3.134E-02	0.0133	2.860E-05	0.0000	0.000E+00	0.0000	1.983E-05	0.0000	4.494E-08	0.0000	7.922E-09	0.0000	4.293E-06	0.0000
Th-232	1.420E+00	0.6013	6.828E-03	0.0029	0.000E+00	0.0000	8.807E-02	0.0373	8.202E-05	0.0000	2.226E-04	0.0001	1.005E-03	0.0004
Total	2.230E+00	0.9446	7.359E-03	0.0031	0.000E+00	0.0000	1.219E-01	0.0516	1.126E-04	0.0000	3.107E-04	0.0001	1.181E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.139E-01	0.3447
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.139E-02	0.0133
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.516E+00	0.6420
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.361E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.409E-02	0.0314	4.888E-05	0.0000	0.000E+00	0.0000	2.991E-03	0.0013	2.723E-06	0.0000	7.848E-06	0.0000	1.592E-05	0.0000
Th-228	2.234E-05	0.0000	2.038E-08	0.0000	0.000E+00	0.0000	1.395E-08	0.0000	3.202E-11	0.0000	5.645E-12	0.0000	3.060E-09	0.0000
Th-232	2.156E+00	0.9138	7.310E-03	0.0031	0.000E+00	0.0000	1.172E-01	0.0497	1.090E-04	0.0000	3.004E-04	0.0001	1.165E-03	0.0005
Total	2.230E+00	0.9453	7.358E-03	0.0031	0.000E+00	0.0000	1.202E-01	0.0510	1.117E-04	0.0000	3.083E-04	0.0001	1.181E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.715E-02	0.0327
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.238E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.282E+00	0.9673
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.359E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.603E-05	0.0000	1.057E-08	0.0000	0.000E+00	0.0000	6.159E-07	0.0000	5.708E-10	0.0000	1.649E-09	0.0000	3.443E-09	0.0000
Th-228	2.160E-16	0.0000	1.970E-19	0.0000	0.000E+00	0.0000	1.284E-19	0.0000	3.092E-22	0.0000	5.452E-23	0.0000	2.958E-20	0.0000
Th-232	2.230E+00	0.9475	7.358E-03	0.0031	0.000E+00	0.0000	1.145E-01	0.0486	1.084E-04	0.0000	2.996E-04	0.0001	1.181E-03	0.0005
Total	2.230E+00	0.9476	7.358E-03	0.0031	0.000E+00	0.0000	1.145E-01	0.0486	1.084E-04	0.0000	2.996E-04	0.0001	1.181E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.666E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.163E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.353E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.353E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	5.407E-16	0.0000	3.569E-19	0.0000	0.000E+00	0.0000	1.782E-17	0.0000	1.753E-20	0.0000	5.105E-20	0.0000	1.162E-19	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.229E+00	0.9542	7.355E-03	0.0031	0.000E+00	0.0000	9.808E-02	0.0420	9.919E-05	0.0000	2.750E-04	0.0001	1.180E-03	0.0005
Total	2.229E+00	0.9542	7.355E-03	0.0031	0.000E+00	0.0000	9.808E-02	0.0420	9.919E-05	0.0000	2.750E-04	0.0001	1.180E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.590E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.336E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.336E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.071E+00	0.9766	7.346E-03	0.0035	0.000E+00	0.0000	4.079E-02	0.0192	6.684E-05	0.0000	1.888E-04	0.0001	1.179E-03	0.0006
Total	2.071E+00	0.9766	7.346E-03	0.0035	0.000E+00	0.0000	4.079E-02	0.0192	6.684E-05	0.0000	1.888E-04	0.0001	1.179E-03	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.120E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.120E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	8.953E-01	7.935E-01	6.234E-01	2.679E-01	2.399E-02	5.158E-06	1.711E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	2.175E-01	5.283E-01	7.847E-01	5.459E-01	5.316E-02	1.150E-05	3.879E-16	0.000E+00
Ra-228+D	ΣDSR(j)		1.113E+00	1.322E+00	1.408E+00	8.139E-01	7.715E-02	1.666E-05	5.590E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.176E+00	8.185E-01	3.966E-01	3.139E-02	2.238E-05	2.163E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	9.808E-03	9.806E-03	9.802E-03	9.788E-03	9.747E-03	9.606E-03	9.201E-03	7.786E-03
Th-232	Ra-228+D	1.000E+00	5.462E-02	1.562E-01	3.262E-01	6.811E-01	9.234E-01	9.417E-01	9.256E-01	8.251E-01
Th-232	Th-228+D	1.000E+00	9.105E-03	5.573E-02	2.213E-01	8.251E-01	1.349E+00	1.402E+00	1.401E+00	1.287E+00
Th-232	ΣDSR(j)		7.353E-02	2.218E-01	5.573E-01	1.516E+00	2.282E+00	2.353E+00	2.336E+00	2.120E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	2.247E+01	1.891E+01	1.775E+01	3.072E+01	3.240E+02	1.501E+06	*2.726E+14	*2.726E+14	
Th-228	2.126E+01	3.054E+01	6.304E+01	7.963E+02	1.117E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	3.400E+02	1.127E+02	4.486E+01	1.649E+01	1.095E+01	1.062E+01	1.070E+01	1.179E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)		DSR(i,tmax)	
			G(i,tmin)	G(i,tmin)	G(i,tmax)	G(i,tmax)
				(pCi/g)		(pCi/g)
Ra-228	1.000E+00	2.524 ± 0.005	1.415E+00	1.767E+01	1.113E+00	2.247E+01
Th-228	1.000E+00	0.000E+00	1.176E+00	2.126E+01	1.176E+00	2.126E+01
Th-232	1.000E+00	68.9 ± 0.1	2.355E+00	1.061E+01	7.353E-02	3.400E+02

Summary : Hematite - Excavation Scenario - Th-232+C - AF 16.7 m²

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	8.953E-01	7.935E-01	6.234E-01	2.679E-01	2.399E-02	5.158E-06	1.711E-16	0.000E+00
Ra-228	Th-232	1.000E+00	5.462E-02	1.562E-01	3.262E-01	6.811E-01	9.234E-01	9.417E-01	9.256E-01	8.251E-01
Ra-228	ΣDOSE(j)		9.499E-01	9.498E-01	9.496E-01	9.490E-01	9.474E-01	9.417E-01	9.256E-01	8.251E-01
Th-228	Ra-228	1.000E+00	2.175E-01	5.283E-01	7.847E-01	5.459E-01	5.316E-02	1.150E-05	3.879E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.176E+00	8.185E-01	3.966E-01	3.139E-02	2.238E-05	2.163E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	9.105E-03	5.573E-02	2.213E-01	8.251E-01	1.349E+00	1.402E+00	1.401E+00	1.287E+00
Th-228	ΣDOSE(j)		1.403E+00	1.403E+00	1.403E+00	1.402E+00	1.402E+00	1.402E+00	1.401E+00	1.287E+00
Th-232	Th-232	1.000E+00	9.808E-03	9.806E-03	9.802E-03	9.788E-03	9.747E-03	9.606E-03	9.201E-03	7.786E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.809E-06	1.960E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.997E-01	9.994E-01	9.981E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01	9.981E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.706E-06	2.938E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.997E-01	9.994E-01	9.981E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01	9.981E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.982E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.66 seconds

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Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m^2

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Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.670E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.835E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.835E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.835E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	167.00 square meters	Ra-228	1.000E+00
Thickness:	0.90 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.607E+00	4.606E+00	4.604E+00	4.598E+00	4.581E+00	4.523E+00	4.357E+00	3.719E+00
M(t):	1.843E-01	1.842E-01	1.842E-01	1.839E-01	1.833E-01	1.809E-01	1.743E-01	1.488E-01

Maximum TDOSE(t): 4.607E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.497E+00	0.3249	2.777E-04	0.0001	0.000E+00	0.0000	1.124E+00	0.2440	1.001E-03	0.0002	2.952E-03	0.0006	3.517E-03	0.0008
Th-228	1.772E+00	0.3847	1.382E-03	0.0003	0.000E+00	0.0000	7.478E-03	0.0016	1.683E-05	0.0000	2.968E-06	0.0000	1.608E-03	0.0003
Th-232	8.571E-02	0.0186	7.837E-03	0.0017	0.000E+00	0.0000	9.497E-02	0.0206	1.138E-04	0.0000	1.676E-04	0.0000	6.683E-03	0.0015
Total	3.354E+00	0.7282	9.497E-03	0.0021	0.000E+00	0.0000	1.227E+00	0.2663	1.131E-03	0.0002	3.122E-03	0.0007	1.181E-02	0.0026

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.629E+00	0.5706
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.782E+00	0.3869
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.955E-01	0.0424
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.607E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.832E+00	0.3978	6.405E-04	0.0001	0.000E+00	0.0000	9.986E-01	0.2168	8.923E-04	0.0002	2.616E-03	0.0006	3.577E-03	0.0008
Th-228	1.233E+00	0.2678	9.621E-04	0.0002	0.000E+00	0.0000	5.202E-03	0.0011	1.172E-05	0.0000	2.066E-06	0.0000	1.119E-03	0.0002
Th-232	2.887E-01	0.0627	7.894E-03	0.0017	0.000E+00	0.0000	2.223E-01	0.0483	2.264E-04	0.0000	5.003E-04	0.0001	7.112E-03	0.0015
Total	3.354E+00	0.7283	9.497E-03	0.0021	0.000E+00	0.0000	1.226E+00	0.2662	1.130E-03	0.0002	3.119E-03	0.0007	1.181E-02	0.0026

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.838E+00	0.6163
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.241E+00	0.2694
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.268E-01	0.1144
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.606E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.996E+00	0.4336	9.376E-04	0.0002	0.000E+00	0.0000	7.859E-01	0.1707	7.058E-04	0.0002	2.055E-03	0.0004	3.316E-03	0.0007
Th-228	5.976E-01	0.1298	4.662E-04	0.0001	0.000E+00	0.0000	2.517E-03	0.0005	5.677E-06	0.0000	1.001E-06	0.0000	5.423E-04	0.0001
Th-232	7.602E-01	0.1651	8.093E-03	0.0018	0.000E+00	0.0000	4.360E-01	0.0947	4.180E-04	0.0001	1.060E-03	0.0002	7.950E-03	0.0017
Total	3.354E+00	0.7285	9.497E-03	0.0021	0.000E+00	0.0000	1.224E+00	0.2659	1.129E-03	0.0002	3.116E-03	0.0007	1.181E-02	0.0026

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.789E+00	0.6058
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.011E-01	0.1306
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.214E+00	0.2636
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.604E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.173E+00	0.2550	6.483E-04	0.0001	0.000E+00	0.0000	3.377E-01	0.0734	3.056E-04	0.0001	8.818E-04	0.0002	1.711E-03	0.0004
Th-228	4.731E-02	0.0103	3.690E-05	0.0000	0.000E+00	0.0000	1.983E-04	0.0000	4.494E-07	0.0000	7.922E-08	0.0000	4.293E-05	0.0000
Th-232	2.134E+00	0.4641	8.811E-03	0.0019	0.000E+00	0.0000	8.807E-01	0.1915	8.202E-04	0.0002	2.226E-03	0.0005	1.005E-02	0.0022
Total	3.354E+00	0.7294	9.497E-03	0.0021	0.000E+00	0.0000	1.219E+00	0.2650	1.126E-03	0.0002	3.107E-03	0.0007	1.181E-02	0.0026

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E+00	0.3293
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.759E-02	0.0103
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.037E+00	0.6604
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.598E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.115E-01	0.0243	6.308E-05	0.0000	0.000E+00	0.0000	2.991E-02	0.0065	2.723E-05	0.0000	7.848E-05	0.0000	1.592E-04	0.0000
Th-228	3.372E-05	0.0000	2.630E-08	0.0000	0.000E+00	0.0000	1.395E-07	0.0000	3.202E-10	0.0000	5.645E-11	0.0000	3.060E-08	0.0000
Th-232	3.242E+00	0.7077	9.433E-03	0.0021	0.000E+00	0.0000	1.172E+00	0.2559	1.090E-03	0.0002	3.004E-03	0.0007	1.165E-02	0.0025
Total	3.354E+00	0.7320	9.496E-03	0.0021	0.000E+00	0.0000	1.202E+00	0.2624	1.117E-03	0.0002	3.083E-03	0.0007	1.181E-02	0.0026

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.418E-01	0.0309
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.392E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.440E+00	0.9691
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.582E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.412E-05	0.0000	1.365E-08	0.0000	0.000E+00	0.0000	6.159E-06	0.0000	5.708E-09	0.0000	1.649E-08	0.0000	3.443E-08	0.0000
Th-228	3.260E-16	0.0000	2.543E-19	0.0000	0.000E+00	0.0000	1.284E-18	0.0000	3.092E-21	0.0000	5.452E-22	0.0000	2.958E-19	0.0000
Th-232	3.353E+00	0.7413	9.495E-03	0.0021	0.000E+00	0.0000	1.145E+00	0.2531	1.084E-03	0.0002	2.996E-03	0.0007	1.181E-02	0.0026
Total	3.353E+00	0.7413	9.495E-03	0.0021	0.000E+00	0.0000	1.145E+00	0.2531	1.084E-03	0.0002	2.996E-03	0.0007	1.181E-02	0.0026

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.035E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.278E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.523E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.523E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.138E-16	0.0000	4.605E-19	0.0000	0.000E+00	0.0000	1.782E-16	0.0000	1.753E-19	0.0000	5.105E-19	0.0000	1.162E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.352E+00	0.7692	9.492E-03	0.0022	0.000E+00	0.0000	9.808E-01	0.2251	9.919E-04	0.0002	2.750E-03	0.0006	1.180E-02	0.0027
Total	3.352E+00	0.7692	9.492E-03	0.0022	0.000E+00	0.0000	9.808E-01	0.2251	9.919E-04	0.0002	2.750E-03	0.0006	1.180E-02	0.0027

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.943E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.357E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.357E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.287E+00	0.8839	9.479E-03	0.0025	0.000E+00	0.0000	4.079E-01	0.1097	6.684E-04	0.0002	1.888E-03	0.0005	1.179E-02	0.0032
Total	3.287E+00	0.8839	9.479E-03	0.0025	0.000E+00	0.0000	4.079E-01	0.1097	6.684E-04	0.0002	1.888E-03	0.0005	1.179E-02	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.719E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.719E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	2.293E+00	2.032E+00	1.596E+00	6.846E-01	6.102E-02	1.289E-05	4.057E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.353E-01	8.063E-01	1.194E+00	8.293E-01	8.074E-02	1.746E-05	5.886E-16	0.000E+00
Ra-228+D	ΣDSR(j)		2.629E+00	2.838E+00	2.789E+00	1.514E+00	1.418E-01	3.035E-05	9.943E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.782E+00	1.241E+00	6.011E-01	4.759E-02	3.392E-05	3.278E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	4.459E-02	4.457E-02	4.453E-02	4.439E-02	4.398E-02	4.257E-02	3.855E-02	2.447E-02
Th-232	Ra-228+D	1.000E+00	1.367E-01	3.967E-01	8.315E-01	1.737E+00	2.345E+00	2.350E+00	2.192E+00	1.633E+00
Th-232	Th-228+D	1.000E+00	1.415E-02	8.553E-02	3.377E-01	1.255E+00	2.051E+00	2.131E+00	2.127E+00	2.062E+00
Th-232	ΣDSR(j)		1.955E-01	5.268E-01	1.214E+00	3.037E+00	4.440E+00	4.523E+00	4.357E+00	3.719E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	9.511E+00	8.808E+00	8.963E+00	1.651E+01	1.764E+02	8.237E+05	*2.726E+14	*2.726E+14	
Th-228	1.403E+01	2.015E+01	4.159E+01	5.254E+02	7.371E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.279E+02	4.746E+01	2.060E+01	8.233E+00	5.631E+00	5.527E+00	5.737E+00	6.722E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	1.714 ± 0.003	2.874E+00	8.698E+00	2.629E+00	9.511E+00
Th-228	1.000E+00	0.000E+00	1.782E+00	1.403E+01	1.782E+00	1.403E+01
Th-232	1.000E+00	55.1 ± 0.1	4.554E+00	5.490E+00	1.955E-01	1.279E+02

Summary : Hematite - Excavation Scenario - Th-232+C - AF 167 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		2.293E+00	2.032E+00	1.596E+00	6.846E-01	6.102E-02	1.289E-05	4.057E-16 0.000E+00
Ra-228	Th-232	1.000E+00		1.367E-01	3.967E-01	8.315E-01	1.737E+00	2.345E+00	2.350E+00	2.192E+00 1.633E+00
Ra-228	ΣDOSE(j)			2.430E+00	2.429E+00	2.427E+00	2.422E+00	2.406E+00	2.350E+00	2.192E+00 1.633E+00
Th-228	Ra-228	1.000E+00		3.353E-01	8.063E-01	1.194E+00	8.293E-01	8.074E-02	1.746E-05	5.886E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.782E+00	1.241E+00	6.011E-01	4.759E-02	3.392E-05	3.278E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.415E-02	8.553E-02	3.377E-01	1.255E+00	2.051E+00	2.131E+00	2.127E+00 2.062E+00
Th-228	ΣDOSE(j)			2.132E+00	2.133E+00	2.132E+00	2.132E+00	2.132E+00	2.131E+00	2.127E+00 2.062E+00
Th-232	Th-232	1.000E+00		4.459E-02	4.457E-02	4.453E-02	4.439E-02	4.398E-02	4.257E-02	3.855E-02 2.447E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.809E-06	1.960E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.997E-01	9.994E-01 9.981E-01
Ra-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01 9.981E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.706E-06	2.938E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.997E-01	9.994E-01 9.981E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01 9.981E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01 9.982E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.64 seconds

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Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m²

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.250E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.250E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.250E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m²

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	5.00 square meters	Ra-228	1.000E+00
Thickness:	0.90 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.279E+00	1.279E+00	1.279E+00	1.279E+00	1.279E+00	1.277E+00	1.271E+00	1.144E+00
M(t):	5.118E-02	5.118E-02	5.117E-02	5.116E-02	5.114E-02	5.106E-02	5.084E-02	4.575E-02

Maximum TDOSE(t): 1.279E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	5.554E-01	0.4341	1.880E-04	0.0001	0.000E+00	0.0000	3.366E-02	0.0263	2.996E-05	0.0000	8.837E-05	0.0001	1.053E-04	0.0001
Th-228	6.486E-01	0.5069	9.360E-04	0.0007	0.000E+00	0.0000	2.239E-04	0.0002	5.040E-07	0.0000	8.885E-08	0.0000	4.814E-05	0.0000
Th-232	3.184E-02	0.0249	5.307E-03	0.0041	0.000E+00	0.0000	2.844E-03	0.0022	3.406E-06	0.0000	5.017E-06	0.0000	2.001E-04	0.0002
Total	1.236E+00	0.9659	6.431E-03	0.0050	0.000E+00	0.0000	3.673E-02	0.0287	3.387E-05	0.0000	9.348E-05	0.0001	3.535E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.894E-01	0.4607
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.498E-01	0.5079
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.020E-02	0.0314
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.279E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.773E-01	0.5294	4.337E-04	0.0003	0.000E+00	0.0000	2.990E-02	0.0234	2.672E-05	0.0000	7.834E-05	0.0001	1.071E-04	0.0001
Th-228	4.515E-01	0.3529	6.515E-04	0.0005	0.000E+00	0.0000	1.557E-04	0.0001	3.508E-07	0.0000	6.184E-08	0.0000	3.351E-05	0.0000
Th-232	1.070E-01	0.0836	5.345E-03	0.0042	0.000E+00	0.0000	6.656E-03	0.0052	6.777E-06	0.0000	1.498E-05	0.0000	2.129E-04	0.0002
Total	1.236E+00	0.9659	6.431E-03	0.0050	0.000E+00	0.0000	3.671E-02	0.0287	3.384E-05	0.0000	9.338E-05	0.0001	3.535E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.079E-01	0.5533
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.523E-01	0.3535
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.192E-01	0.0932
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.279E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.360E-01	0.5753	6.349E-04	0.0005	0.000E+00	0.0000	2.353E-02	0.0184	2.113E-05	0.0000	6.153E-05	0.0000	9.927E-05	0.0001
Th-228	2.187E-01	0.1710	3.157E-04	0.0002	0.000E+00	0.0000	7.536E-05	0.0001	1.700E-07	0.0000	2.996E-08	0.0000	1.624E-05	0.0000
Th-232	2.810E-01	0.2197	5.480E-03	0.0043	0.000E+00	0.0000	1.305E-02	0.0102	1.251E-05	0.0000	3.174E-05	0.0000	2.380E-04	0.0002
Total	1.236E+00	0.9659	6.431E-03	0.0050	0.000E+00	0.0000	3.666E-02	0.0287	3.382E-05	0.0000	9.330E-05	0.0001	3.535E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.604E-01	0.5944
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.191E-01	0.1713
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.998E-01	0.2344
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.279E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.315E-01	0.3374	4.390E-04	0.0003	0.000E+00	0.0000	1.011E-02	0.0079	9.149E-06	0.0000	2.640E-05	0.0000	5.123E-05	0.0000
Th-228	1.732E-02	0.0135	2.499E-05	0.0000	0.000E+00	0.0000	5.938E-06	0.0000	1.345E-08	0.0000	2.372E-09	0.0000	1.285E-06	0.0000
Th-232	7.869E-01	0.6152	5.967E-03	0.0047	0.000E+00	0.0000	2.637E-02	0.0206	2.456E-05	0.0000	6.663E-05	0.0001	3.010E-04	0.0002
Total	1.236E+00	0.9661	6.430E-03	0.0050	0.000E+00	0.0000	3.649E-02	0.0285	3.372E-05	0.0000	9.304E-05	0.0001	3.535E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.422E-01	0.3457
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.735E-02	0.0136
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.196E-01	0.6408
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.279E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.102E-02	0.0321	4.271E-05	0.0000	0.000E+00	0.0000	8.956E-04	0.0007	8.154E-07	0.0000	2.350E-06	0.0000	4.767E-06	0.0000
Th-228	1.234E-05	0.0000	1.781E-08	0.0000	0.000E+00	0.0000	4.175E-09	0.0000	9.586E-12	0.0000	1.690E-12	0.0000	9.161E-10	0.0000
Th-232	1.195E+00	0.9343	6.387E-03	0.0050	0.000E+00	0.0000	3.510E-02	0.0275	3.262E-05	0.0000	8.995E-05	0.0001	3.487E-04	0.0003
Total	1.236E+00	0.9664	6.430E-03	0.0050	0.000E+00	0.0000	3.599E-02	0.0282	3.344E-05	0.0000	9.230E-05	0.0001	3.535E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.197E-02	0.0328
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.236E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.237E+00	0.9672
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.279E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.872E-06	0.0000	9.241E-09	0.0000	0.000E+00	0.0000	1.844E-07	0.0000	1.709E-10	0.0000	4.937E-10	0.0000	1.031E-09	0.0000
Th-228	1.193E-16	0.0000	1.722E-19	0.0000	0.000E+00	0.0000	3.844E-20	0.0000	9.256E-23	0.0000	1.632E-23	0.0000	8.857E-21	0.0000
Th-232	1.235E+00	0.9677	6.429E-03	0.0050	0.000E+00	0.0000	3.427E-02	0.0268	3.247E-05	0.0000	8.971E-05	0.0001	3.535E-04	0.0003
Total	1.235E+00	0.9677	6.429E-03	0.0050	0.000E+00	0.0000	3.427E-02	0.0268	3.247E-05	0.0000	8.971E-05	0.0001	3.535E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.068E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.277E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.277E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.994E-16	0.0000	3.118E-19	0.0000	0.000E+00	0.0000	5.334E-18	0.0000	5.247E-21	0.0000	1.528E-20	0.0000	3.479E-20	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.235E+00	0.9715	6.427E-03	0.0051	0.000E+00	0.0000	2.937E-02	0.0231	2.970E-05	0.0000	8.233E-05	0.0001	3.533E-04	0.0003
Total	1.235E+00	0.9715	6.427E-03	0.0051	0.000E+00	0.0000	2.937E-02	0.0231	2.970E-05	0.0000	8.233E-05	0.0001	3.533E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.051E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.271E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.271E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.125E+00	0.9833	6.419E-03	0.0056	0.000E+00	0.0000	1.221E-02	0.0107	2.001E-05	0.0000	5.653E-05	0.0000	3.529E-04	0.0003
Total	1.125E+00	0.9833	6.419E-03	0.0056	0.000E+00	0.0000	1.221E-02	0.0107	2.001E-05	0.0000	5.653E-05	0.0000	3.529E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.144E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.144E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	4.694E-01	4.161E-01	3.269E-01	1.405E-01	1.259E-02	2.714E-06	9.071E-17	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.200E-01	2.918E-01	4.335E-01	3.016E-01	2.937E-02	6.354E-06	2.143E-16	0.000E+00
Ra-228+D	ΣDSR(j)		5.894E-01	7.079E-01	7.604E-01	4.422E-01	4.197E-02	9.068E-06	3.051E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	6.498E-01	4.523E-01	2.191E-01	1.735E-02	1.236E-05	1.195E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	6.442E-03	6.441E-03	6.440E-03	6.435E-03	6.423E-03	6.380E-03	6.258E-03	5.830E-03
Th-232	Ra-228+D	1.000E+00	2.874E-02	8.203E-02	1.712E-01	3.574E-01	4.848E-01	4.957E-01	4.908E-01	4.398E-01
Th-232	Th-228+D	1.000E+00	5.021E-03	3.076E-02	1.222E-01	4.558E-01	7.453E-01	7.745E-01	7.740E-01	6.981E-01
Th-232	ΣDSR(j)		4.020E-02	1.192E-01	2.998E-01	8.196E-01	1.237E+00	1.277E+00	1.271E+00	1.144E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	4.241E+01	3.532E+01	3.288E+01	5.654E+01	5.957E+02	2.757E+06	*2.726E+14	*2.726E+14	
Th-228	3.847E+01	5.527E+01	1.141E+02	1.441E+03	2.022E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	6.219E+02	2.097E+02	8.338E+01	3.050E+01	2.022E+01	1.958E+01	1.967E+01	2.186E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.594 ± 0.005	7.630E-01	3.277E+01	5.894E-01	4.241E+01
Th-228	1.000E+00	0.000E+00	6.498E-01	3.847E+01	6.498E-01	3.847E+01
Th-232	1.000E+00	73.4 ± 0.1	1.277E+00	1.958E+01	4.020E-02	6.219E+02

Summary : Hematite - Excavation Scenario - Th-232+C - AF 5.0 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	4.694E-01	4.161E-01	3.269E-01	1.405E-01	1.259E-02	2.714E-06	9.071E-17	0.000E+00
Ra-228	Th-232	1.000E+00	2.874E-02	8.203E-02	1.712E-01	3.574E-01	4.848E-01	4.957E-01	4.908E-01	4.398E-01
Ra-228	ΣDOSE(j)		4.982E-01	4.981E-01	4.981E-01	4.979E-01	4.974E-01	4.957E-01	4.908E-01	4.398E-01
Th-228	Ra-228	1.000E+00	1.200E-01	2.918E-01	4.335E-01	3.016E-01	2.937E-02	6.354E-06	2.143E-16	0.000E+00
Th-228	Th-228	1.000E+00	6.498E-01	4.523E-01	2.191E-01	1.735E-02	1.236E-05	1.195E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	5.021E-03	3.076E-02	1.222E-01	4.558E-01	7.453E-01	7.745E-01	7.740E-01	6.981E-01
Th-228	ΣDOSE(j)		7.748E-01	7.748E-01	7.748E-01	7.748E-01	7.747E-01	7.745E-01	7.740E-01	6.981E-01
Th-232	Th-232	1.000E+00	6.442E-03	6.441E-03	6.440E-03	6.435E-03	6.423E-03	6.380E-03	6.258E-03	5.830E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.809E-06	1.960E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.997E-01	9.994E-01	9.981E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01	9.981E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.706E-06	2.938E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.997E-01	9.994E-01	9.981E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01	9.981E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.982E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.56 seconds

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Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m²

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	9.000E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m³/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.200E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm³/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm³/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm³/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.347E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm³/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm³/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm³/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm³/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm³/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm³/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.817E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m³/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.250E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.250E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.250E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m²

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	50.00 square meters	Ra-228	1.000E+00
Thickness:	0.90 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.307E+00	3.307E+00	3.306E+00	3.304E+00	3.299E+00	3.281E+00	3.231E+00	2.938E+00
M(t):	1.323E-01	1.323E-01	1.322E-01	1.322E-01	1.320E-01	1.313E-01	1.292E-01	1.175E-01

Maximum TDOSE(t): 3.307E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.308E+00	0.3955	2.431E-04	0.0001	0.000E+00	0.0000	3.366E-01	0.1018	2.996E-04	0.0001	8.837E-04	0.0003	1.053E-03	0.0003
Th-228	1.544E+00	0.4668	1.210E-03	0.0004	0.000E+00	0.0000	2.239E-03	0.0007	5.040E-06	0.0000	8.885E-07	0.0000	4.814E-04	0.0001
Th-232	7.491E-02	0.0227	6.860E-03	0.0021	0.000E+00	0.0000	2.844E-02	0.0086	3.406E-05	0.0000	5.017E-05	0.0000	2.001E-03	0.0006
Total	2.926E+00	0.8850	8.313E-03	0.0025	0.000E+00	0.0000	3.673E-01	0.1111	3.387E-04	0.0001	9.348E-04	0.0003	3.535E-03	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.647E+00	0.4980
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.548E+00	0.4680
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.123E-01	0.0340
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.307E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.600E+00	0.4838	5.606E-04	0.0002	0.000E+00	0.0000	2.990E-01	0.0904	2.672E-04	0.0001	7.834E-04	0.0002	1.071E-03	0.0003
Th-228	1.075E+00	0.3250	8.422E-04	0.0003	0.000E+00	0.0000	1.557E-03	0.0005	3.508E-06	0.0000	6.184E-07	0.0000	3.351E-04	0.0001
Th-232	2.522E-01	0.0763	6.910E-03	0.0021	0.000E+00	0.0000	6.656E-02	0.0201	6.777E-05	0.0000	1.498E-04	0.0000	2.129E-03	0.0006
Total	2.926E+00	0.8850	8.313E-03	0.0025	0.000E+00	0.0000	3.671E-01	0.1110	3.384E-04	0.0001	9.338E-04	0.0003	3.535E-03	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.901E+00	0.5750
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E+00	0.3258
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.280E-01	0.0992
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.307E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.742E+00	0.5269	8.207E-04	0.0002	0.000E+00	0.0000	2.353E-01	0.0712	2.113E-04	0.0001	6.153E-04	0.0002	9.927E-04	0.0003
Th-228	5.206E-01	0.1575	4.080E-04	0.0001	0.000E+00	0.0000	7.536E-04	0.0002	1.700E-06	0.0000	2.996E-07	0.0000	1.624E-04	0.0000
Th-232	6.637E-01	0.2007	7.084E-03	0.0021	0.000E+00	0.0000	1.305E-01	0.0395	1.251E-04	0.0000	3.174E-04	0.0001	2.380E-03	0.0007
Total	2.926E+00	0.8851	8.313E-03	0.0025	0.000E+00	0.0000	3.666E-01	0.1109	3.382E-04	0.0001	9.330E-04	0.0003	3.535E-03	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.980E+00	0.5989
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.219E-01	0.1579
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.041E-01	0.2432
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.306E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.023E+00	0.3096	5.675E-04	0.0002	0.000E+00	0.0000	1.011E-01	0.0306	9.149E-05	0.0000	2.640E-04	0.0001	5.123E-04	0.0002
Th-228	4.121E-02	0.0125	3.230E-05	0.0000	0.000E+00	0.0000	5.938E-05	0.0000	1.345E-07	0.0000	2.372E-08	0.0000	1.285E-05	0.0000
Th-232	1.862E+00	0.5636	7.713E-03	0.0023	0.000E+00	0.0000	2.637E-01	0.0798	2.456E-04	0.0001	6.663E-04	0.0002	3.010E-03	0.0009
Total	2.926E+00	0.8856	8.313E-03	0.0025	0.000E+00	0.0000	3.649E-01	0.1104	3.372E-04	0.0001	9.304E-04	0.0003	3.535E-03	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.125E+00	0.3406
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.132E-02	0.0125
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.137E+00	0.6469
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.304E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO TH-232+C.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.725E-02	0.0295	5.522E-05	0.0000	0.000E+00	0.0000	8.956E-03	0.0027	8.154E-06	0.0000	2.350E-05	0.0000	4.767E-05	0.0000
Th-228	2.938E-05	0.0000	2.302E-08	0.0000	0.000E+00	0.0000	4.175E-08	0.0000	9.586E-11	0.0000	1.690E-11	0.0000	9.161E-09	0.0000
Th-232	2.829E+00	0.8574	8.257E-03	0.0025	0.000E+00	0.0000	3.510E-01	0.1064	3.262E-04	0.0001	8.995E-04	0.0003	3.487E-03	0.0011
Total	2.926E+00	0.8869	8.312E-03	0.0025	0.000E+00	0.0000	3.599E-01	0.1091	3.344E-04	0.0001	9.230E-04	0.0003	3.535E-03	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.063E-01	0.0322
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.945E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.193E+00	0.9678
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.299E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m²

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Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.104E-05	0.0000	1.195E-08	0.0000	0.000E+00	0.0000	1.844E-06	0.0000	1.709E-09	0.0000	4.937E-09	0.0000	1.031E-08	0.0000
Th-228	2.840E-16	0.0000	2.226E-19	0.0000	0.000E+00	0.0000	3.844E-19	0.0000	9.256E-22	0.0000	1.632E-22	0.0000	8.857E-20	0.0000
Th-232	2.925E+00	0.8916	8.311E-03	0.0025	0.000E+00	0.0000	3.427E-01	0.1045	3.247E-04	0.0001	8.971E-04	0.0003	3.535E-03	0.0011
Total	2.925E+00	0.8916	8.311E-03	0.0025	0.000E+00	0.0000	3.427E-01	0.1045	3.247E-04	0.0001	8.971E-04	0.0003	3.535E-03	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.291E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.847E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.281E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.281E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m^2

June 21, 2011

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - EXCAVATION SCENARIO TH-232+C.RAD

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.097E-16	0.0000	4.031E-19	0.0000	0.000E+00	0.0000	5.334E-17	0.0000	5.247E-20	0.0000	1.528E-19	0.0000	3.479E-19	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.924E+00	0.9051	8.308E-03	0.0026	0.000E+00	0.0000	2.937E-01	0.0909	2.970E-04	0.0001	8.233E-04	0.0003	3.533E-03	0.0011
Total	2.924E+00	0.9051	8.308E-03	0.0026	0.000E+00	0.0000	2.937E-01	0.0909	2.970E-04	0.0001	8.233E-04	0.0003	3.533E-03	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.640E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.231E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.231E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.803E+00	0.9541	8.298E-03	0.0028	0.000E+00	0.0000	1.221E-01	0.0416	2.001E-04	0.0001	5.653E-04	0.0002	3.529E-03	0.0012
Total	2.803E+00	0.9541	8.298E-03	0.0028	0.000E+00	0.0000	1.221E-01	0.0416	2.001E-04	0.0001	5.653E-04	0.0002	3.529E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.938E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.938E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.359E+00	1.205E+00	9.464E-01	4.065E-01	3.635E-02	7.768E-06	2.534E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	2.873E-01	6.964E-01	1.034E+00	7.189E-01	7.000E-02	1.514E-05	5.107E-16	0.000E+00
Ra-228+D	ΣDSR(j)		1.647E+00	1.901E+00	1.980E+00	1.125E+00	1.063E-01	2.291E-05	7.640E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.548E+00	1.077E+00	5.219E-01	4.132E-02	2.945E-05	2.847E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.792E-02	1.792E-02	1.791E-02	1.786E-02	1.774E-02	1.732E-02	1.611E-02	1.189E-02
Th-232	Ra-228+D	1.000E+00	8.231E-02	2.365E-01	4.945E-01	1.033E+00	1.398E+00	1.418E+00	1.370E+00	1.177E+00
Th-232	Th-228+D	1.000E+00	1.205E-02	7.356E-02	2.917E-01	1.087E+00	1.777E+00	1.846E+00	1.845E+00	1.749E+00
Th-232	ΣDSR(j)		1.123E-01	3.280E-01	8.041E-01	2.137E+00	3.193E+00	3.281E+00	3.231E+00	2.938E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.518E+01	1.315E+01	1.263E+01	2.221E+01	2.351E+02	1.091E+06	*2.726E+14	*2.726E+14	
Th-228	1.615E+01	2.321E+01	4.790E+01	6.051E+02	8.489E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	2.226E+02	7.622E+01	3.109E+01	1.170E+01	7.831E+00	7.619E+00	7.739E+00	8.510E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.330 ± 0.005	1.998E+00	1.252E+01	1.647E+00	1.518E+01
Th-228	1.000E+00	0.000E+00	1.548E+00	1.615E+01	1.548E+00	1.615E+01
Th-232	1.000E+00	62.6 ± 0.1	3.289E+00	7.602E+00	1.123E-01	2.226E+02

Summary : Hematite - Excavation Scenario - Th-232+C - AF 50.0 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.359E+00	1.205E+00	9.464E-01	4.065E-01	3.635E-02	7.768E-06	2.534E-16 0.000E+00
Ra-228	Th-232	1.000E+00		8.231E-02	2.365E-01	4.945E-01	1.033E+00	1.398E+00	1.418E+00	1.370E+00 1.177E+00
Ra-228	ΣDOSE(j)			1.442E+00	1.441E+00	1.441E+00	1.439E+00	1.434E+00	1.418E+00	1.370E+00 1.177E+00
Th-228	Ra-228	1.000E+00		2.873E-01	6.964E-01	1.034E+00	7.189E-01	7.000E-02	1.514E-05	5.107E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.548E+00	1.077E+00	5.219E-01	4.132E-02	2.945E-05	2.847E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.205E-02	7.356E-02	2.917E-01	1.087E+00	1.777E+00	1.846E+00	1.845E+00 1.749E+00
Th-228	ΣDOSE(j)			1.847E+00	1.847E+00	1.847E+00	1.847E+00	1.847E+00	1.846E+00	1.845E+00 1.749E+00
Th-232	Th-232	1.000E+00		1.792E-02	1.792E-02	1.791E-02	1.786E-02	1.774E-02	1.732E-02	1.611E-02 1.189E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.809E-06	1.960E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.997E-01	9.994E-01 9.981E-01
Ra-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01 9.981E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.706E-06	2.938E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.997E-01	9.994E-01 9.981E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.997E-01	9.994E-01 9.981E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01 9.982E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.56 seconds

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Summary : Hematite - Root CSM - AF 1 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 1 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Root CSM - AF 1 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Root CSM - AF 1 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Root CSM - AF 1 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Root CSM - AF 1 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Root CSM - AF 1 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Root CSM - AF 1 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.00 square meters	Am-241	1.000E+00
Thickness:	1.35 meters	Np-237	1.000E+00
Cover Depth:	0.15 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr							
Basic Radiation Dose Limit = 2.500E+01 mrem/yr							
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)							
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	1.200E-02	1.206E-02	1.218E-02	1.261E-02	1.396E-02	2.043E-02	4.398E-02
M(t):	4.802E-04	4.826E-04	4.873E-04	5.046E-04	5.582E-04	8.172E-04	1.759E-03
Maximum TDOSE(t): 4.699E-02 mrem/yr at t = 249.5 ± 0.5 years							

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.495E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Am-241	9.253E-04	0.0197	7.993E-04	0.0170	0.000E+00	0.0000	1.620E-04	0.0034	1.829E-07	0.0000	2.601E-08	0.0000	3.451E-05	0.0007
Np-237	1.340E-02	0.2852	6.473E-04	0.0138	0.000E+00	0.0000	2.628E-03	0.0559	4.431E-06	0.0001	1.457E-07	0.0000	2.804E-05	0.0006
Pu-239	8.299E-06	0.0002	1.128E-03	0.0240	0.000E+00	0.0000	2.298E-04	0.0049	5.185E-07	0.0000	1.828E-08	0.0000	4.903E-05	0.0010
Pu-240	5.135E-06	0.0001	1.107E-03	0.0236	0.000E+00	0.0000	2.254E-04	0.0048	5.086E-07	0.0000	1.794E-08	0.0000	4.809E-05	0.0010
Tc-99	2.981E-06	0.0001	1.848E-08	0.0000	0.000E+00	0.0000	7.418E-04	0.0158	4.325E-08	0.0000	1.176E-06	0.0000	1.708E-08	0.0000
U-234	4.338E-05	0.0009	3.290E-04	0.0070	0.000E+00	0.0000	6.503E-05	0.0014	5.450E-07	0.0000	8.820E-07	0.0000	3.721E-06	0.0001
U-235	1.983E-02	0.4221	4.023E-04	0.0086	0.000E+00	0.0000	1.004E-04	0.0021	5.162E-07	0.0000	8.332E-07	0.0000	5.175E-06	0.0001
U-238	3.670E-03	0.0781	2.929E-04	0.0062	0.000E+00	0.0000	6.089E-05	0.0013	5.167E-07	0.0000	8.357E-07	0.0000	3.512E-06	0.0001
Total	3.789E-02	0.8063	4.706E-03	0.1001	0.000E+00	0.0000	4.213E-03	0.0897	7.262E-06	0.0002	3.935E-06	0.0001	1.721E-04	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.495E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.921E-03	0.0409
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.671E-02	0.3556
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.416E-03	0.0301
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.386E-03	0.0295
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.461E-04	0.0159
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.426E-04	0.0094
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.034E-02	0.4329
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.029E-03	0.0857
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.699E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.225E-06	0.0002	2.391E-06	0.0002	0.000E+00	0.0000	2.016E-04	0.0168	6.391E-09	0.0000	7.116E-10	0.0000	1.032E-07	0.0000
Np-237	3.250E-03	0.2707	2.905E-06	0.0002	0.000E+00	0.0000	4.919E-03	0.4098	2.898E-06	0.0002	7.804E-08	0.0000	1.259E-07	0.0000
Pu-239	5.550E-07	0.0000	2.313E-06	0.0002	0.000E+00	0.0000	1.962E-04	0.0163	1.244E-08	0.0000	3.429E-10	0.0000	1.005E-07	0.0000
Pu-240	1.621E-08	0.0000	2.313E-06	0.0002	0.000E+00	0.0000	1.962E-04	0.0163	1.244E-08	0.0000	3.428E-10	0.0000	1.005E-07	0.0000
Tc-99	4.371E-08	0.0000	4.483E-11	0.0000	0.000E+00	0.0000	7.500E-04	0.0625	4.355E-08	0.0000	1.183E-06	0.0001	4.143E-11	0.0000
U-234	2.065E-07	0.0000	7.115E-07	0.0001	0.000E+00	0.0000	5.804E-05	0.0048	4.521E-08	0.0000	5.668E-08	0.0000	8.033E-09	0.0000
U-235	1.632E-03	0.1360	6.631E-07	0.0001	0.000E+00	0.0000	5.489E-05	0.0046	4.272E-08	0.0000	5.354E-08	0.0000	7.593E-09	0.0000
U-238	6.706E-04	0.0559	6.362E-07	0.0001	0.000E+00	0.0000	5.511E-05	0.0046	4.293E-08	0.0000	5.381E-08	0.0000	7.627E-09	0.0000
Total	5.556E-03	0.4628	1.193E-05	0.0010	0.000E+00	0.0000	6.432E-03	0.5358	3.103E-06	0.0003	1.426E-06	0.0001	4.534E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.064E-04	0.0172
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.175E-03	0.6810
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.992E-04	0.0166
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.987E-04	0.0165
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-04	0.0626
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.907E-05	0.0049
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.688E-03	0.1406
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.264E-04	0.0605
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.200E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.289E-06	0.0002	7.163E-06	0.0006	0.000E+00	0.0000	2.015E-04	0.0167	7.443E-09	0.0000	8.633E-10	0.0000	3.093E-07	0.0000
Np-237	3.272E-03	0.2713	8.690E-06	0.0007	0.000E+00	0.0000	4.907E-03	0.4068	2.916E-06	0.0002	7.878E-08	0.0000	3.766E-07	0.0000
Pu-239	5.616E-07	0.0000	6.938E-06	0.0006	0.000E+00	0.0000	1.964E-04	0.0163	1.451E-08	0.0000	4.165E-10	0.0000	3.015E-07	0.0000
Pu-240	1.653E-08	0.0000	6.937E-06	0.0006	0.000E+00	0.0000	1.964E-04	0.0163	1.451E-08	0.0000	4.165E-10	0.0000	3.014E-07	0.0000
Tc-99	4.452E-08	0.0000	1.344E-10	0.0000	0.000E+00	0.0000	7.500E-04	0.0622	4.355E-08	0.0000	1.183E-06	0.0001	1.242E-10	0.0000
U-234	2.103E-07	0.0000	2.134E-06	0.0002	0.000E+00	0.0000	5.807E-05	0.0048	4.738E-08	0.0000	6.026E-08	0.0000	2.409E-08	0.0000
U-235	1.651E-03	0.1369	1.989E-06	0.0002	0.000E+00	0.0000	5.504E-05	0.0046	4.476E-08	0.0000	5.693E-08	0.0000	2.279E-08	0.0000
U-238	6.755E-04	0.0560	1.908E-06	0.0002	0.000E+00	0.0000	5.513E-05	0.0046	4.498E-08	0.0000	5.721E-08	0.0000	2.288E-08	0.0000
Total	5.602E-03	0.4644	3.576E-05	0.0030	0.000E+00	0.0000	6.420E-03	0.5322	3.134E-06	0.0003	1.438E-06	0.0001	1.359E-06	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.112E-04	0.0175
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.192E-03	0.6790
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-04	0.0169
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.036E-04	0.0169
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-04	0.0623
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.054E-05	0.0050
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.708E-03	0.1416
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.327E-04	0.0607
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.206E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.421E-06	0.0002	1.666E-05	0.0014	0.000E+00	0.0000	2.011E-04	0.0165	9.548E-09	0.0000	1.165E-09	0.0000	7.193E-07	0.0001
Np-237	3.317E-03	0.2723	2.015E-05	0.0017	0.000E+00	0.0000	4.883E-03	0.4008	2.954E-06	0.0002	8.024E-08	0.0000	8.731E-07	0.0001
Pu-239	5.748E-07	0.0000	1.618E-05	0.0013	0.000E+00	0.0000	1.967E-04	0.0161	1.866E-08	0.0000	5.639E-10	0.0000	7.033E-07	0.0001
Pu-240	1.719E-08	0.0000	1.618E-05	0.0013	0.000E+00	0.0000	1.966E-04	0.0161	1.866E-08	0.0000	5.637E-10	0.0000	7.031E-07	0.0001
Tc-99	4.617E-08	0.0000	3.131E-10	0.0000	0.000E+00	0.0000	7.501E-04	0.0616	4.355E-08	0.0000	1.183E-06	0.0001	2.894E-10	0.0000
U-234	2.191E-07	0.0000	4.976E-06	0.0004	0.000E+00	0.0000	5.812E-05	0.0048	5.171E-08	0.0000	6.742E-08	0.0000	5.618E-08	0.0000
U-235	1.690E-03	0.1387	4.641E-06	0.0004	0.000E+00	0.0000	5.534E-05	0.0045	4.886E-08	0.0000	6.369E-08	0.0000	5.324E-08	0.0000
U-238	6.854E-04	0.0563	4.449E-06	0.0004	0.000E+00	0.0000	5.519E-05	0.0045	4.910E-08	0.0000	6.401E-08	0.0000	5.334E-08	0.0000
Total	5.696E-03	0.4675	8.324E-05	0.0068	0.000E+00	0.0000	6.397E-03	0.5250	3.194E-06	0.0003	1.460E-06	0.0001	3.162E-06	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.210E-04	0.0181
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.225E-03	0.6751
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.141E-04	0.0176
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.135E-04	0.0175
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.514E-04	0.0617
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.349E-05	0.0052
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.750E-03	0.1436
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.452E-04	0.0612
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.218E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.945E-06	0.0002	4.942E-05	0.0039	0.000E+00	0.0000	2.000E-04	0.0159	1.681E-08	0.0000	2.206E-09	0.0000	2.134E-06	0.0002
Np-237	3.480E-03	0.2759	5.909E-05	0.0047	0.000E+00	0.0000	4.801E-03	0.3806	3.079E-06	0.0002	8.517E-08	0.0000	2.561E-06	0.0002
Pu-239	6.236E-07	0.0000	4.852E-05	0.0038	0.000E+00	0.0000	1.976E-04	0.0157	3.320E-08	0.0000	1.079E-09	0.0000	2.109E-06	0.0002
Pu-240	1.970E-08	0.0000	4.848E-05	0.0038	0.000E+00	0.0000	1.975E-04	0.0157	3.317E-08	0.0000	1.078E-09	0.0000	2.107E-06	0.0002
Tc-99	5.243E-08	0.0000	9.344E-10	0.0000	0.000E+00	0.0000	7.502E-04	0.0595	4.357E-08	0.0000	1.183E-06	0.0001	8.635E-10	0.0000
U-234	2.613E-07	0.0000	1.490E-05	0.0012	0.000E+00	0.0000	5.831E-05	0.0046	6.685E-08	0.0000	9.241E-08	0.0000	1.682E-07	0.0000
U-235	1.831E-03	0.1452	1.393E-05	0.0011	0.000E+00	0.0000	5.643E-05	0.0045	6.317E-08	0.0000	8.731E-08	0.0000	1.605E-07	0.0000
U-238	7.213E-04	0.0572	1.332E-05	0.0011	0.000E+00	0.0000	5.537E-05	0.0044	6.348E-08	0.0000	8.774E-08	0.0000	1.597E-07	0.0000
Total	6.036E-03	0.4785	2.477E-04	0.0196	0.000E+00	0.0000	6.316E-03	0.5007	3.399E-06	0.0003	1.540E-06	0.0001	9.399E-06	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.545E-04	0.0202
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.345E-03	0.6616
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.489E-04	0.0197
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.481E-04	0.0197
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.515E-04	0.0596
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.380E-05	0.0059
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.902E-03	0.1508
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.903E-04	0.0627
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.261E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.132E-06	0.0004	1.390E-04	0.0100	0.000E+00	0.0000	1.968E-04	0.0141	3.666E-08	0.0000	5.053E-09	0.0000	6.001E-06	0.0004
Np-237	3.985E-03	0.2855	1.609E-04	0.0115	0.000E+00	0.0000	4.571E-03	0.3275	3.399E-06	0.0002	9.785E-08	0.0000	6.971E-06	0.0005
Pu-239	7.861E-07	0.0001	1.407E-04	0.0101	0.000E+00	0.0000	2.004E-04	0.0144	7.461E-08	0.0000	2.547E-09	0.0000	6.113E-06	0.0004
Pu-240	2.904E-08	0.0000	1.403E-04	0.0101	0.000E+00	0.0000	1.999E-04	0.0143	7.444E-08	0.0000	2.542E-09	0.0000	6.098E-06	0.0004
Tc-99	7.528E-08	0.0000	2.672E-09	0.0000	0.000E+00	0.0000	7.504E-04	0.0538	4.359E-08	0.0000	1.184E-06	0.0001	2.470E-09	0.0000
U-234	4.991E-07	0.0000	4.300E-05	0.0031	0.000E+00	0.0000	5.886E-05	0.0042	1.097E-07	0.0000	1.632E-07	0.0000	4.854E-07	0.0000
U-235	2.301E-03	0.1649	4.083E-05	0.0029	0.000E+00	0.0000	5.965E-05	0.0043	1.037E-07	0.0000	1.542E-07	0.0000	4.761E-07	0.0000
U-238	8.345E-04	0.0598	3.843E-05	0.0028	0.000E+00	0.0000	5.588E-05	0.0040	1.042E-07	0.0000	1.549E-07	0.0000	4.607E-07	0.0000
Total	7.127E-03	0.5107	7.032E-04	0.0504	0.000E+00	0.0000	6.092E-03	0.4366	3.945E-06	0.0003	1.764E-06	0.0001	2.661E-05	0.0019

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.469E-04	0.0249
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.727E-03	0.6253
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.480E-04	0.0249
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.464E-04	0.0248
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.517E-04	0.0539
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.031E-04	0.0074
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.403E-03	0.1722
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.296E-04	0.0666
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.396E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.447E-05	0.0017	4.091E-04	0.0200	0.000E+00	0.0000	1.854E-04	0.0091	9.652E-08	0.0000	1.363E-08	0.0000	1.766E-05	0.0009
Np-237	6.335E-03	0.3101	4.225E-04	0.0207	0.000E+00	0.0000	3.842E-03	0.1881	4.140E-06	0.0002	1.284E-07	0.0000	1.831E-05	0.0009
Pu-239	1.735E-06	0.0001	4.604E-04	0.0225	0.000E+00	0.0000	2.099E-04	0.0103	2.183E-07	0.0000	7.642E-09	0.0000	2.001E-05	0.0010
Pu-240	1.103E-07	0.0000	4.568E-04	0.0224	0.000E+00	0.0000	2.083E-04	0.0102	2.166E-07	0.0000	7.584E-09	0.0000	1.985E-05	0.0010
Tc-99	2.608E-07	0.0000	8.342E-09	0.0000	0.000E+00	0.0000	7.498E-04	0.0367	4.361E-08	0.0000	1.185E-06	0.0001	7.709E-09	0.0000
U-234	3.668E-06	0.0002	1.386E-04	0.0068	0.000E+00	0.0000	6.078E-05	0.0030	2.554E-07	0.0000	4.036E-07	0.0000	1.565E-06	0.0001
U-235	5.036E-03	0.2465	1.425E-04	0.0070	0.000E+00	0.0000	7.182E-05	0.0035	2.416E-07	0.0000	3.816E-07	0.0000	1.725E-06	0.0001
U-238	1.390E-03	0.0680	1.238E-04	0.0061	0.000E+00	0.0000	5.759E-05	0.0028	2.425E-07	0.0000	3.832E-07	0.0000	1.484E-06	0.0001
Total	1.280E-02	0.6266	2.154E-03	0.1054	0.000E+00	0.0000	5.385E-03	0.2636	5.454E-06	0.0003	2.511E-06	0.0001	8.061E-05	0.0039

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.468E-04	0.0317
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.062E-02	0.5199
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.922E-04	0.0339
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.853E-04	0.0335
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-04	0.0368
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.053E-04	0.0100
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.253E-03	0.2571
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.573E-03	0.0770
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.043E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.547E-04	0.0194	7.371E-04	0.0168	0.000E+00	0.0000	1.493E-04	0.0034	1.688E-07	0.0000	2.399E-08	0.0000	3.182E-05	0.0007
Np-237	1.138E-02	0.2587	5.499E-04	0.0125	0.000E+00	0.0000	2.232E-03	0.0507	3.764E-06	0.0001	1.239E-07	0.0000	2.382E-05	0.0005
Pu-239	8.324E-06	0.0002	1.123E-03	0.0255	0.000E+00	0.0000	2.287E-04	0.0052	5.163E-07	0.0000	1.820E-08	0.0000	4.881E-05	0.0011
Pu-240	5.236E-06	0.0001	1.097E-03	0.0250	0.000E+00	0.0000	2.234E-04	0.0051	5.044E-07	0.0000	1.779E-08	0.0000	4.769E-05	0.0011
Tc-99	2.885E-06	0.0001	1.778E-08	0.0000	0.000E+00	0.0000	7.135E-04	0.0162	4.160E-08	0.0000	1.131E-06	0.0000	1.643E-08	0.0000
U-234	5.691E-05	0.0013	3.240E-04	0.0074	0.000E+00	0.0000	6.438E-05	0.0015	5.370E-07	0.0000	8.690E-07	0.0000	3.670E-06	0.0001
U-235	1.957E-02	0.4450	4.182E-04	0.0095	0.000E+00	0.0000	1.071E-04	0.0024	5.084E-07	0.0000	8.202E-07	0.0000	5.466E-06	0.0001
U-238	3.609E-03	0.0821	2.882E-04	0.0066	0.000E+00	0.0000	5.989E-05	0.0014	5.085E-07	0.0000	8.223E-07	0.0000	3.455E-06	0.0001
Total	3.549E-02	0.8069	4.538E-03	0.1032	0.000E+00	0.0000	3.778E-03	0.0859	6.549E-06	0.0001	3.827E-06	0.0001	1.648E-04	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.773E-03	0.0403
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.419E-02	0.3226
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.410E-03	0.0320
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.374E-03	0.0312
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.176E-04	0.0163
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.504E-04	0.0102
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.011E-02	0.4571
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.962E-03	0.0901
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.398E-02	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.768E-04	0.0107	2.383E-04	0.0092	0.000E+00	0.0000	4.835E-05	0.0019	5.471E-08	0.0000	7.758E-09	0.0000	1.029E-05	0.0004
Np-237	1.180E-03	0.0454	5.764E-05	0.0022	0.000E+00	0.0000	2.308E-04	0.0089	3.898E-07	0.0000	1.373E-08	0.0000	2.471E-06	0.0001
Pu-239	7.790E-06	0.0003	1.050E-03	0.0404	0.000E+00	0.0000	2.136E-04	0.0082	4.824E-07	0.0000	1.701E-08	0.0000	4.561E-05	0.0018
Pu-240	4.635E-06	0.0002	9.715E-04	0.0374	0.000E+00	0.0000	1.977E-04	0.0076	4.466E-07	0.0000	1.576E-08	0.0000	4.222E-05	0.0016
Tc-99	1.679E-06	0.0001	1.035E-08	0.0000	0.000E+00	0.0000	4.153E-04	0.0160	2.421E-08	0.0000	6.584E-07	0.0000	9.566E-09	0.0000
U-234	4.307E-04	0.0166	2.614E-04	0.0101	0.000E+00	0.0000	6.266E-05	0.0024	4.457E-07	0.0000	7.275E-07	0.0000	3.108E-06	0.0001
U-235	1.627E-02	0.6266	6.041E-04	0.0233	0.000E+00	0.0000	1.865E-04	0.0072	4.098E-07	0.0000	6.563E-07	0.0000	8.889E-06	0.0003
U-238	2.861E-03	0.1102	2.290E-04	0.0088	0.000E+00	0.0000	4.757E-05	0.0018	4.039E-07	0.0000	6.532E-07	0.0000	2.745E-06	0.0001
Total	2.103E-02	0.8100	3.411E-03	0.1314	0.000E+00	0.0000	1.402E-03	0.0540	2.657E-06	0.0001	2.750E-06	0.0001	1.153E-04	0.0044

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.737E-04	0.0221
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.471E-03	0.0567
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.317E-03	0.0507
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.217E-03	0.0468
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.176E-04	0.0161
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.590E-04	0.0292
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.707E-02	0.6574
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.141E-03	0.1210
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.597E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.064E-04	2.112E-04	2.209E-04	2.545E-04	3.469E-04	6.465E-04	1.771E-03	5.725E-04
Am-241	Np-237+D	1.000E+00	1.280E-09	3.936E-09	9.302E-09	2.858E-08	8.834E-08	3.756E-07	1.781E-06	1.196E-06
Am-241	U-233	1.000E+00	2.056E-17	1.243E-16	6.297E-16	6.156E-15	6.908E-14	1.337E-12	1.856E-11	7.147E-11
Am-241	Th-229+D	1.000E+00	3.621E-20	5.430E-19	6.437E-18	1.827E-16	5.382E-15	3.347E-13	2.027E-11	3.377E-10
Am-241	ΣDSR (j)		2.064E-04	2.112E-04	2.210E-04	2.545E-04	3.469E-04	6.468E-04	1.773E-03	5.737E-04
Np-237+D	Np-237+D	1.000E+00	8.175E-03	8.192E-03	8.225E-03	8.345E-03	8.727E-03	1.062E-02	1.419E-02	1.467E-03
Np-237+D	U-233	1.000E+00	1.725E-10	4.600E-10	1.067E-09	3.578E-09	1.392E-08	8.176E-08	3.806E-07	4.882E-07
Np-237+D	Th-229+D	1.000E+00	4.449E-13	3.121E-12	1.679E-11	1.611E-10	1.639E-09	3.118E-08	6.488E-07	3.716E-06
Np-237+D	ΣDSR (j)		8.175E-03	8.192E-03	8.225E-03	8.345E-03	8.727E-03	1.062E-02	1.419E-02	1.471E-03
Pu-239	Pu-239	1.000E+00	1.992E-04	2.042E-04	2.141E-04	2.489E-04	3.480E-04	6.922E-04	1.410E-03	1.317E-03
Pu-239	U-235+D	1.000E+00	8.318E-13	2.524E-12	6.033E-12	1.967E-11	7.221E-11	5.205E-10	6.014E-09	1.727E-08
Pu-239	Pa-231	1.000E+00	2.142E-17	1.553E-16	8.378E-16	7.743E-15	7.033E-14	9.755E-13	1.416E-11	1.401E-10
Pu-239	Ac-227+D	1.000E+00	2.299E-19	3.291E-18	3.797E-17	1.054E-15	2.962E-14	1.471E-12	5.407E-11	6.181E-10
Pu-239	ΣDSR (j)		1.992E-04	2.042E-04	2.141E-04	2.489E-04	3.480E-04	6.922E-04	1.410E-03	1.317E-03
Pu-240	Pu-240	4.950E-08	9.834E-12	1.008E-11	1.057E-11	1.228E-11	1.715E-11	3.392E-11	6.803E-11	6.022E-11
Pu-240	Pu-240	1.000E+00	1.987E-04	2.036E-04	2.135E-04	2.481E-04	3.464E-04	6.853E-04	1.374E-03	1.217E-03
Pu-240	U-236	1.000E+00	7.967E-13	2.514E-12	6.204E-12	2.172E-11	8.819E-11	5.733E-10	3.427E-09	9.566E-09
Pu-240	Th-232	1.000E+00	4.904E-23	3.342E-22	1.996E-21	2.750E-20	4.727E-19	1.419E-17	2.919E-16	2.880E-15
Pu-240	Ra-228+D	1.000E+00	2.921E-22	4.333E-21	4.859E-20	1.118E-18	2.009E-17	4.629E-16	9.389E-15	9.630E-14
Pu-240	Th-228+D	1.000E+00	3.793E-23	1.086E-21	2.333E-20	1.108E-18	2.947E-17	7.644E-16	1.457E-14	1.514E-13
Pu-240	ΣDSR (j)		1.987E-04	2.036E-04	2.135E-04	2.481E-04	3.464E-04	6.853E-04	1.374E-03	1.217E-03
Tc-99	Tc-99	1.000E+00	7.513E-04	7.513E-04	7.514E-04	7.515E-04	7.517E-04	7.513E-04	7.176E-04	4.176E-04
U-234	U-234	1.000E+00	5.907E-05	6.054E-05	6.349E-05	7.377E-05	1.029E-04	2.023E-04	4.011E-04	3.173E-04
U-234	Th-230	1.000E+00	1.719E-10	5.163E-10	1.394E-09	6.491E-09	3.834E-08	3.495E-07	2.463E-06	7.298E-06
U-234	Ra-226+D	1.000E+00	4.917E-11	3.472E-10	1.859E-09	1.733E-08	1.640E-07	2.659E-06	4.656E-05	4.311E-04
U-234	Pb-210+D	1.000E+00	2.479E-14	2.463E-13	2.079E-12	4.169E-11	8.228E-10	2.027E-08	3.096E-07	3.316E-06
U-234	ΣDSR (j)		5.907E-05	6.054E-05	6.349E-05	7.380E-05	1.031E-04	2.053E-04	4.504E-04	7.590E-04
U-235+D	U-235+D	1.000E+00	1.688E-03	1.708E-03	1.749E-03	1.900E-03	2.395E-03	5.196E-03	1.961E-02	1.554E-02
U-235+D	Pa-231	1.000E+00	6.661E-08	2.050E-07	4.852E-07	1.498E-06	4.680E-06	1.965E-05	9.474E-05	2.751E-04
U-235+D	Ac-227+D	1.000E+00	9.096E-10	6.108E-09	3.203E-08	2.963E-07	2.747E-06	3.691E-05	3.990E-04	1.253E-03
U-235+D	ΣDSR (j)		1.688E-03	1.708E-03	1.750E-03	1.902E-03	2.403E-03	5.253E-03	2.011E-02	1.707E-02
U-238	U-238	5.400E-05	2.864E-09	2.935E-09	3.077E-09	3.572E-09	4.975E-09	9.737E-09	1.906E-08	1.510E-08
U-238+D	U-238+D	9.999E-01	7.264E-04	7.327E-04	7.452E-04	7.903E-04	9.295E-04	1.573E-03	3.962E-03	3.140E-03
U-238+D	U-234	9.999E-01	8.407E-11	2.578E-10	6.303E-10	2.196E-09	8.899E-09	5.763E-08	3.418E-07	9.011E-07
U-238+D	Th-230	9.999E-01	1.760E-16	1.192E-15	7.093E-15	9.702E-14	1.656E-12	4.952E-11	1.033E-09	9.799E-09
U-238+D	Ra-226+D	9.999E-01	3.479E-17	5.268E-16	6.228E-15	1.721E-13	4.724E-12	2.520E-10	1.315E-08	3.999E-07
U-238+D	Pb-210+D	9.999E-01	1.599E-20	3.279E-19	5.812E-18	3.301E-16	1.889E-14	1.621E-12	8.018E-11	2.987E-09
U-238+D	ΣDSR (j)		7.264E-04	7.327E-04	7.452E-04	7.903E-04	9.295E-04	1.573E-03	3.962E-03	3.141E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Root CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		1.211E+05	1.184E+05	1.131E+05	9.822E+04	7.206E+04	3.865E+04	1.410E+04	4.358E+04
Np-237		3.058E+03	3.052E+03	3.040E+03	2.996E+03	2.865E+03	2.354E+03	1.762E+03	1.699E+04
Pu-239		1.255E+05	1.224E+05	1.167E+05	1.004E+05	7.184E+04	3.611E+04	1.774E+04	1.898E+04
Pu-240		1.258E+05	1.228E+05	1.171E+05	1.008E+05	7.216E+04	3.648E+04	1.819E+04	2.055E+04
Tc-99		3.328E+04	3.327E+04	3.327E+04	3.327E+04	3.326E+04	3.328E+04	3.484E+04	5.986E+04
U-234		4.232E+05	4.129E+05	3.938E+05	3.388E+05	2.425E+05	1.218E+05	5.551E+04	3.294E+04
U-235		1.481E+04	1.463E+04	1.429E+04	1.315E+04	1.041E+04	4.759E+03	1.243E+03	1.464E+03
U-238		3.442E+04	3.412E+04	3.355E+04	3.163E+04	2.689E+04	1.589E+04	6.310E+03	7.958E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 249.5 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	250.0 ± 0.5	1.922E-03	1.301E+04	1.921E-03	1.301E+04
Np-237	1.000E+00	247.9 ± 0.5	1.676E-02	1.492E+03	1.671E-02	1.496E+03
Pu-239	1.000E+00	249.9 ± 0.5	1.416E-03	1.765E+04	1.416E-03	1.766E+04
Pu-240	1.000E+00	249.9 ± 0.5	1.386E-03	1.803E+04	1.386E-03	1.804E+04
Tc-99	1.000E+00	48.00 ± 0.10	7.518E-04	3.325E+04	7.461E-04	3.351E+04
U-234	1.000E+00	1.000E+03	7.590E-04	3.294E+04	4.426E-04	5.649E+04
U-235	1.000E+00	249.9 ± 0.5	2.035E-02	1.229E+03	2.034E-02	1.229E+03
U-238	1.000E+00	248.2 ± 0.5	4.032E-03	6.201E+03	4.029E-03	6.205E+03

Summary : Hematite - Root CSM - AF 1 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.064E-04	2.112E-04	2.209E-04	2.545E-04	3.469E-04	6.465E-04	1.771E-03	5.725E-04
Np-237	Am-241	1.000E+00	1.280E-09	3.936E-09	9.302E-09	2.858E-08	8.834E-08	3.756E-07	1.781E-06	1.196E-06
Np-237	Np-237	1.000E+00	8.175E-03	8.192E-03	8.225E-03	8.345E-03	8.727E-03	1.062E-02	1.419E-02	1.467E-03
Np-237	ΣDOSE (j)		8.175E-03	8.192E-03	8.225E-03	8.345E-03	8.727E-03	1.062E-02	1.419E-02	1.468E-03
U-233	Am-241	1.000E+00	2.056E-17	1.243E-16	6.297E-16	6.156E-15	6.908E-14	1.337E-12	1.856E-11	7.147E-11
U-233	Np-237	1.000E+00	1.725E-10	4.600E-10	1.067E-09	3.578E-09	1.392E-08	8.176E-08	3.806E-07	4.882E-07
U-233	ΣDOSE (j)		1.725E-10	4.600E-10	1.067E-09	3.578E-09	1.392E-08	8.176E-08	3.806E-07	4.883E-07
Th-229	Am-241	1.000E+00	3.621E-20	5.430E-19	6.437E-18	1.827E-16	5.382E-15	3.347E-13	2.027E-11	3.377E-10
Th-229	Np-237	1.000E+00	4.449E-13	3.121E-12	1.679E-11	1.611E-10	1.639E-09	3.118E-08	6.488E-07	3.716E-06
Th-229	ΣDOSE (j)		4.449E-13	3.121E-12	1.679E-11	1.611E-10	1.639E-09	3.118E-08	6.489E-07	3.716E-06
Pu-239	Pu-239	1.000E+00	1.992E-04	2.042E-04	2.141E-04	2.489E-04	3.480E-04	6.922E-04	1.410E-03	1.317E-03
U-235	Pu-239	1.000E+00	8.318E-13	2.524E-12	6.033E-12	1.967E-11	7.221E-11	5.205E-10	6.014E-09	1.727E-08
U-235	U-235	1.000E+00	1.688E-03	1.708E-03	1.749E-03	1.900E-03	2.395E-03	5.196E-03	1.961E-02	1.554E-02
U-235	ΣDOSE (j)		1.688E-03	1.708E-03	1.749E-03	1.900E-03	2.395E-03	5.196E-03	1.961E-02	1.554E-02
Pa-231	Pu-239	1.000E+00	2.142E-17	1.553E-16	8.378E-16	7.743E-15	7.033E-14	9.755E-13	1.416E-11	1.401E-10
Pa-231	U-235	1.000E+00	6.661E-08	2.050E-07	4.852E-07	1.498E-06	4.680E-06	1.965E-05	9.474E-05	2.751E-04
Pa-231	ΣDOSE (j)		6.661E-08	2.050E-07	4.852E-07	1.498E-06	4.680E-06	1.965E-05	9.474E-05	2.751E-04
Ac-227	Pu-239	1.000E+00	2.299E-19	3.291E-18	3.797E-17	1.054E-15	2.962E-14	1.471E-12	5.407E-11	6.181E-10
Ac-227	U-235	1.000E+00	9.096E-10	6.108E-09	3.203E-08	2.963E-07	2.747E-06	3.691E-05	3.990E-04	1.253E-03
Ac-227	ΣDOSE (j)		9.096E-10	6.108E-09	3.203E-08	2.963E-07	2.747E-06	3.691E-05	3.990E-04	1.253E-03
Pu-240	Pu-240	4.950E-08	9.834E-12	1.008E-11	1.057E-11	1.228E-11	1.715E-11	3.392E-11	6.803E-11	6.022E-11
Pu-240	Pu-240	1.000E+00	1.987E-04	2.036E-04	2.135E-04	2.481E-04	3.464E-04	6.853E-04	1.374E-03	1.217E-03
Pu-240	ΣDOSE (j)		1.987E-04	2.036E-04	2.135E-04	2.481E-04	3.464E-04	6.853E-04	1.374E-03	1.217E-03
U-236	Pu-240	1.000E+00	7.967E-13	2.514E-12	6.204E-12	2.172E-11	8.819E-11	5.733E-10	3.427E-09	9.566E-09
Th-232	Pu-240	1.000E+00	4.904E-23	3.342E-22	1.996E-21	2.750E-20	4.727E-19	1.419E-17	2.919E-16	2.880E-15
Ra-228	Pu-240	1.000E+00	2.921E-22	4.333E-21	4.859E-20	1.118E-18	2.009E-17	4.629E-16	9.389E-15	9.630E-14
Th-228	Pu-240	1.000E+00	3.793E-23	1.086E-21	2.333E-20	1.108E-18	2.947E-17	7.644E-16	1.457E-14	1.514E-13
Tc-99	Tc-99	1.000E+00	7.513E-04	7.513E-04	7.514E-04	7.515E-04	7.517E-04	7.513E-04	7.176E-04	4.176E-04
U-234	U-234	1.000E+00	5.907E-05	6.054E-05	6.349E-05	7.377E-05	1.029E-04	2.023E-04	4.011E-04	3.173E-04
U-234	U-238	9.999E-01	8.407E-11	2.578E-10	6.303E-10	2.196E-09	8.899E-09	5.763E-08	3.418E-07	9.011E-07
U-234	ΣDOSE (j)		5.907E-05	6.054E-05	6.349E-05	7.377E-05	1.029E-04	2.023E-04	4.014E-04	3.182E-04
Th-230	U-234	1.000E+00	1.719E-10	5.163E-10	1.394E-09	6.491E-09	3.834E-08	3.495E-07	2.463E-06	7.298E-06
Th-230	U-238	9.999E-01	1.760E-16	1.192E-15	7.093E-15	9.702E-14	1.656E-12	4.952E-11	1.033E-09	9.799E-09
Th-230	ΣDOSE (j)		1.719E-10	5.163E-10	1.394E-09	6.491E-09	3.834E-08	3.496E-07	2.465E-06	7.308E-06

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	4.917E-11	3.472E-10	1.859E-09	1.733E-08	1.640E-07	2.659E-06	4.656E-05	4.311E-04
Ra-226	U-238	9.999E-01	3.479E-17	5.268E-16	6.228E-15	1.721E-13	4.724E-12	2.520E-10	1.315E-08	3.999E-07
Ra-226	ΣDOSE(j)		4.917E-11	3.472E-10	1.859E-09	1.733E-08	1.640E-07	2.659E-06	4.657E-05	4.315E-04
Pb-210	U-234	1.000E+00	2.479E-14	2.463E-13	2.079E-12	4.169E-11	8.228E-10	2.027E-08	3.096E-07	3.316E-06
Pb-210	U-238	9.999E-01	1.599E-20	3.279E-19	5.812E-18	3.301E-16	1.889E-14	1.621E-12	8.018E-11	2.987E-09
Pb-210	ΣDOSE(j)		2.479E-14	2.463E-13	2.079E-12	4.169E-11	8.228E-10	2.027E-08	3.097E-07	3.319E-06
U-238	U-238	5.400E-05	2.864E-09	2.935E-09	3.077E-09	3.572E-09	4.975E-09	9.737E-09	1.906E-08	1.510E-08
U-238	U-238	9.999E-01	7.264E-04	7.327E-04	7.452E-04	7.903E-04	9.295E-04	1.573E-03	3.962E-03	3.140E-03
U-238	ΣDOSE(j)		7.264E-04	7.327E-04	7.452E-04	7.903E-04	9.295E-04	1.573E-03	3.962E-03	3.140E-03

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Root CSM - AF 1 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 1 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.10 seconds

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Summary : Hematite - Root CSM - AF 10 m^2

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH (9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH (10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (16)

Summary : Hematite - Root CSM - AF 10 m²

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Attachment 4 to HEM-11-91

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Am-241	1.000E+00
Thickness:	1.35 meters	Np-237	1.000E+00
Cover Depth:	0.15 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr							
Basic Radiation Dose Limit = 2.500E+01 mrem/yr							
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)							
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	8.296E-02	8.305E-02	8.324E-02	8.396E-02	8.656E-02	1.045E-01	2.030E-01
M(t):	3.318E-03	3.322E-03	3.330E-03	3.358E-03	3.462E-03	4.181E-03	8.122E-03
Maximum TDOSE(t): 2.183E-01 mrem/yr at t = 249.5 ± 0.5 years							

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.495E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Nuclide														
Am-241	3.792E-03	0.0174	1.035E-03	0.0047	0.000E+00	0.0000	1.620E-03	0.0074	1.829E-06	0.0000	2.601E-07	0.0000	3.451E-04	0.0016
Np-237	5.960E-02	0.2730	8.384E-04	0.0038	0.000E+00	0.0000	2.628E-02	0.1204	4.431E-05	0.0002	1.457E-06	0.0000	2.804E-04	0.0013
Pu-239	3.596E-05	0.0002	1.461E-03	0.0067	0.000E+00	0.0000	2.298E-03	0.0105	5.185E-06	0.0000	1.828E-07	0.0000	4.903E-04	0.0022
Pu-240	1.974E-05	0.0001	1.433E-03	0.0066	0.000E+00	0.0000	2.254E-03	0.0103	5.086E-06	0.0000	1.794E-07	0.0000	4.809E-04	0.0022
Tc-99	1.301E-05	0.0001	2.393E-08	0.0000	0.000E+00	0.0000	7.418E-03	0.0340	4.325E-07	0.0000	1.176E-05	0.0001	1.708E-07	0.0000
U-234	1.960E-04	0.0009	4.261E-04	0.0020	0.000E+00	0.0000	6.503E-04	0.0030	5.451E-06	0.0000	8.820E-06	0.0000	3.721E-05	0.0002
U-235	8.804E-02	0.4033	5.211E-04	0.0024	0.000E+00	0.0000	1.004E-03	0.0046	5.162E-06	0.0000	8.332E-06	0.0000	5.175E-05	0.0002
U-238	1.656E-02	0.0758	3.794E-04	0.0017	0.000E+00	0.0000	6.089E-04	0.0028	5.167E-06	0.0000	8.357E-06	0.0000	3.512E-05	0.0002
Total	1.683E-01	0.7707	6.095E-03	0.0279	0.000E+00	0.0000	4.213E-02	0.1930	7.262E-05	0.0003	3.935E-05	0.0002	1.721E-03	0.0079

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.495E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.794E-03	0.0311
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.705E-02	0.3987
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.291E-03	0.0197
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.193E-03	0.0192
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.444E-03	0.0341
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.324E-03	0.0061
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.963E-02	0.4106
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.759E-02	0.0806
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.183E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.351E-06	0.0000	3.097E-06	0.0000	0.000E+00	0.0000	2.016E-03	0.0243	6.391E-08	0.0000	7.116E-09	0.0000	1.032E-06	0.0000
Np-237	1.106E-02	0.1333	3.763E-06	0.0000	0.000E+00	0.0000	4.919E-02	0.5930	2.898E-05	0.0003	7.804E-07	0.0000	1.259E-06	0.0000
Pu-239	1.802E-06	0.0000	2.995E-06	0.0000	0.000E+00	0.0000	1.962E-03	0.0237	1.244E-07	0.0000	3.429E-09	0.0000	1.005E-06	0.0000
Pu-240	4.343E-08	0.0000	2.995E-06	0.0000	0.000E+00	0.0000	1.962E-03	0.0237	1.244E-07	0.0000	3.428E-09	0.0000	1.005E-06	0.0000
Tc-99	1.171E-07	0.0000	5.807E-11	0.0000	0.000E+00	0.0000	7.500E-03	0.0904	4.355E-07	0.0000	1.183E-05	0.0001	4.143E-10	0.0000
U-234	5.303E-07	0.0000	9.216E-07	0.0000	0.000E+00	0.0000	5.804E-04	0.0070	4.521E-07	0.0000	5.668E-07	0.0000	8.033E-08	0.0000
U-235	4.961E-03	0.0598	8.589E-07	0.0000	0.000E+00	0.0000	5.489E-04	0.0066	4.272E-07	0.0000	5.354E-07	0.0000	7.593E-08	0.0000
U-238	2.556E-03	0.0308	8.241E-07	0.0000	0.000E+00	0.0000	5.511E-04	0.0066	4.293E-07	0.0000	5.381E-07	0.0000	7.627E-08	0.0000
Total	1.858E-02	0.2240	1.546E-05	0.0002	0.000E+00	0.0000	6.432E-02	0.7753	3.103E-05	0.0004	1.426E-05	0.0002	4.534E-06	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-03	0.0244
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.028E-02	0.7267
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.968E-03	0.0237
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.966E-03	0.0237
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-03	0.0906
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.829E-04	0.0070
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.512E-03	0.0664
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.109E-03	0.0375
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.296E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.456E-06	0.0000	9.278E-06	0.0001	0.000E+00	0.0000	2.015E-03	0.0243	7.443E-08	0.0000	8.633E-09	0.0000	3.093E-06	0.0000
Np-237	1.114E-02	0.1341	1.126E-05	0.0001	0.000E+00	0.0000	4.907E-02	0.5909	2.916E-05	0.0004	7.878E-07	0.0000	3.766E-06	0.0000
Pu-239	1.824E-06	0.0000	8.986E-06	0.0001	0.000E+00	0.0000	1.964E-03	0.0236	1.451E-07	0.0000	4.165E-09	0.0000	3.015E-06	0.0000
Pu-240	4.435E-08	0.0000	8.985E-06	0.0001	0.000E+00	0.0000	1.964E-03	0.0236	1.451E-07	0.0000	4.165E-09	0.0000	3.014E-06	0.0000
Tc-99	1.194E-07	0.0000	1.741E-10	0.0000	0.000E+00	0.0000	7.500E-03	0.0903	4.355E-07	0.0000	1.183E-05	0.0001	1.242E-09	0.0000
U-234	5.413E-07	0.0000	2.764E-06	0.0000	0.000E+00	0.0000	5.807E-04	0.0070	4.738E-07	0.0000	6.026E-07	0.0000	2.409E-07	0.0000
U-235	5.024E-03	0.0605	2.576E-06	0.0000	0.000E+00	0.0000	5.504E-04	0.0066	4.476E-07	0.0000	5.693E-07	0.0000	2.279E-07	0.0000
U-238	2.576E-03	0.0310	2.471E-06	0.0000	0.000E+00	0.0000	5.513E-04	0.0066	4.498E-07	0.0000	5.721E-07	0.0000	2.288E-07	0.0000
Total	1.875E-02	0.2257	4.632E-05	0.0006	0.000E+00	0.0000	6.420E-02	0.7730	3.134E-05	0.0004	1.438E-05	0.0002	1.359E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.031E-03	0.0244
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.026E-02	0.7256
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.978E-03	0.0238
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.976E-03	0.0238
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-03	0.0905
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.853E-04	0.0070
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.578E-03	0.0672
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.131E-03	0.0377
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.305E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.677E-06	0.0000	2.158E-05	0.0003	0.000E+00	0.0000	2.011E-03	0.0242	9.548E-08	0.0000	1.165E-08	0.0000	7.193E-06	0.0001
Np-237	1.131E-02	0.1359	2.610E-05	0.0003	0.000E+00	0.0000	4.883E-02	0.5867	2.954E-05	0.0004	8.024E-07	0.0000	8.731E-06	0.0001
Pu-239	1.871E-06	0.0000	2.096E-05	0.0003	0.000E+00	0.0000	1.967E-03	0.0236	1.866E-07	0.0000	5.639E-09	0.0000	7.033E-06	0.0001
Pu-240	4.625E-08	0.0000	2.096E-05	0.0003	0.000E+00	0.0000	1.966E-03	0.0236	1.866E-07	0.0000	5.637E-09	0.0000	7.031E-06	0.0001
Tc-99	1.242E-07	0.0000	4.056E-10	0.0000	0.000E+00	0.0000	7.501E-03	0.0901	4.355E-07	0.0000	1.183E-05	0.0001	2.894E-09	0.0000
U-234	5.673E-07	0.0000	6.445E-06	0.0001	0.000E+00	0.0000	5.812E-04	0.0070	5.171E-07	0.0000	6.742E-07	0.0000	5.618E-07	0.0000
U-235	5.153E-03	0.0619	6.011E-06	0.0001	0.000E+00	0.0000	5.534E-04	0.0066	4.886E-07	0.0000	6.369E-07	0.0000	5.324E-07	0.0000
U-238	2.617E-03	0.0314	5.763E-06	0.0001	0.000E+00	0.0000	5.519E-04	0.0066	4.910E-07	0.0000	6.401E-07	0.0000	5.334E-07	0.0000
Total	1.909E-02	0.2293	1.078E-04	0.0013	0.000E+00	0.0000	6.397E-02	0.7684	3.194E-05	0.0004	1.460E-05	0.0002	3.162E-05	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.044E-03	0.0246
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.021E-02	0.7234
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.997E-03	0.0240
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.994E-03	0.0240
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-03	0.0903
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.900E-04	0.0071
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.714E-03	0.0686
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.176E-03	0.0382
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.324E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.561E-06	0.0001	6.402E-05	0.0008	0.000E+00	0.0000	2.000E-03	0.0238	1.681E-07	0.0000	2.206E-08	0.0000	2.134E-05	0.0003
Np-237	1.194E-02	0.1422	7.654E-05	0.0009	0.000E+00	0.0000	4.801E-02	0.5718	3.079E-05	0.0004	8.517E-07	0.0000	2.561E-05	0.0003
Pu-239	2.042E-06	0.0000	6.285E-05	0.0007	0.000E+00	0.0000	1.976E-03	0.0235	3.320E-07	0.0000	1.079E-08	0.0000	2.109E-05	0.0003
Pu-240	5.355E-08	0.0000	6.279E-05	0.0007	0.000E+00	0.0000	1.975E-03	0.0235	3.317E-07	0.0000	1.078E-08	0.0000	2.107E-05	0.0003
Tc-99	1.425E-07	0.0000	1.210E-09	0.0000	0.000E+00	0.0000	7.502E-03	0.0894	4.357E-07	0.0000	1.183E-05	0.0001	8.635E-09	0.0000
U-234	7.031E-07	0.0000	1.929E-05	0.0002	0.000E+00	0.0000	5.831E-04	0.0069	6.685E-07	0.0000	9.241E-07	0.0000	1.682E-06	0.0000
U-235	5.630E-03	0.0671	1.805E-05	0.0002	0.000E+00	0.0000	5.643E-04	0.0067	6.317E-07	0.0000	8.731E-07	0.0000	1.605E-06	0.0000
U-238	2.763E-03	0.0329	1.725E-05	0.0002	0.000E+00	0.0000	5.537E-04	0.0066	6.348E-07	0.0000	8.774E-07	0.0000	1.597E-06	0.0000
Total	2.034E-02	0.2422	3.208E-04	0.0038	0.000E+00	0.0000	6.316E-02	0.7523	3.399E-05	0.0004	1.540E-05	0.0002	9.399E-05	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.090E-03	0.0249
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.008E-02	0.7155
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.062E-03	0.0246
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.059E-03	0.0245
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.514E-03	0.0895
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.064E-04	0.0072
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.215E-03	0.0740
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.337E-03	0.0397
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.396E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.376E-06	0.0001	1.800E-04	0.0021	0.000E+00	0.0000	1.968E-03	0.0227	3.666E-07	0.0000	5.053E-08	0.0000	6.001E-05	0.0007
Np-237	1.391E-02	0.1607	2.084E-04	0.0024	0.000E+00	0.0000	4.571E-02	0.5280	3.399E-05	0.0004	9.785E-07	0.0000	6.972E-05	0.0008
Pu-239	2.621E-06	0.0000	1.822E-04	0.0021	0.000E+00	0.0000	2.004E-03	0.0231	7.461E-07	0.0000	2.547E-08	0.0000	6.113E-05	0.0007
Pu-240	8.139E-08	0.0000	1.818E-04	0.0021	0.000E+00	0.0000	1.999E-03	0.0231	7.444E-07	0.0000	2.542E-08	0.0000	6.098E-05	0.0007
Tc-99	2.110E-07	0.0000	3.461E-09	0.0000	0.000E+00	0.0000	7.504E-03	0.0867	4.359E-07	0.0000	1.184E-05	0.0001	2.470E-08	0.0000
U-234	1.552E-06	0.0000	5.569E-05	0.0006	0.000E+00	0.0000	5.886E-04	0.0068	1.097E-06	0.0000	1.632E-06	0.0000	4.854E-06	0.0001
U-235	7.252E-03	0.0838	5.288E-05	0.0006	0.000E+00	0.0000	5.965E-04	0.0069	1.037E-06	0.0000	1.542E-06	0.0000	4.761E-06	0.0001
U-238	3.229E-03	0.0373	4.978E-05	0.0006	0.000E+00	0.0000	5.588E-04	0.0065	1.042E-06	0.0000	1.549E-06	0.0000	4.607E-06	0.0001
Total	2.440E-02	0.2819	9.107E-04	0.0105	0.000E+00	0.0000	6.092E-02	0.7038	3.945E-05	0.0005	1.764E-05	0.0002	2.661E-04	0.0031

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.216E-03	0.0256
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.993E-02	0.6923
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.250E-03	0.0260
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.243E-03	0.0259
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.517E-03	0.0868
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.534E-04	0.0075
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.909E-03	0.0914
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.845E-03	0.0444
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.656E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.805E-05	0.0007	5.299E-04	0.0051	0.000E+00	0.0000	1.854E-03	0.0177	9.652E-07	0.0000	1.363E-07	0.0000	1.766E-04	0.0017
Np-237	2.374E-02	0.2271	5.473E-04	0.0052	0.000E+00	0.0000	3.842E-02	0.3675	4.140E-05	0.0004	1.284E-06	0.0000	1.831E-04	0.0018
Pu-239	6.261E-06	0.0001	5.963E-04	0.0057	0.000E+00	0.0000	2.099E-03	0.0201	2.183E-06	0.0000	7.642E-08	0.0000	2.001E-04	0.0019
Pu-240	3.511E-07	0.0000	5.917E-04	0.0057	0.000E+00	0.0000	2.083E-03	0.0199	2.166E-06	0.0000	7.584E-08	0.0000	1.985E-04	0.0019
Tc-99	8.306E-07	0.0000	1.081E-08	0.0000	0.000E+00	0.0000	7.498E-03	0.0717	4.361E-07	0.0000	1.185E-05	0.0001	7.709E-08	0.0000
U-234	1.413E-05	0.0001	1.795E-04	0.0017	0.000E+00	0.0000	6.078E-04	0.0058	2.554E-06	0.0000	4.036E-06	0.0000	1.565E-05	0.0001
U-235	1.757E-02	0.1681	1.845E-04	0.0018	0.000E+00	0.0000	7.182E-04	0.0069	2.416E-06	0.0000	3.816E-06	0.0000	1.725E-05	0.0002
U-238	5.599E-03	0.0536	1.603E-04	0.0015	0.000E+00	0.0000	5.759E-04	0.0055	2.425E-06	0.0000	3.832E-06	0.0000	1.484E-05	0.0001
Total	4.700E-02	0.4497	2.790E-03	0.0267	0.000E+00	0.0000	5.385E-02	0.5152	5.454E-05	0.0005	2.511E-05	0.0002	8.061E-04	0.0077

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.630E-03	0.0252
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.294E-02	0.6021
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.904E-03	0.0278
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.875E-03	0.0275
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.511E-03	0.0719
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.237E-04	0.0079
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.850E-02	0.1769
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.356E-03	0.0608
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.045E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.507E-03	0.0173	9.547E-04	0.0047	0.000E+00	0.0000	1.493E-03	0.0074	1.688E-06	0.0000	2.399E-07	0.0000	3.182E-04	0.0016
Np-237	5.061E-02	0.2493	7.123E-04	0.0035	0.000E+00	0.0000	2.232E-02	0.1099	3.764E-05	0.0002	1.239E-06	0.0000	2.382E-04	0.0012
Pu-239	3.621E-05	0.0002	1.455E-03	0.0072	0.000E+00	0.0000	2.287E-03	0.0113	5.163E-06	0.0000	1.820E-07	0.0000	4.881E-04	0.0024
Pu-240	2.061E-05	0.0001	1.421E-03	0.0070	0.000E+00	0.0000	2.234E-03	0.0110	5.044E-06	0.0000	1.779E-07	0.0000	4.769E-04	0.0023
Tc-99	1.259E-05	0.0001	2.303E-08	0.0000	0.000E+00	0.0000	7.135E-03	0.0351	4.160E-07	0.0000	1.131E-05	0.0001	1.643E-07	0.0000
U-234	2.590E-04	0.0013	4.197E-04	0.0021	0.000E+00	0.0000	6.438E-04	0.0032	5.370E-06	0.0000	8.690E-06	0.0000	3.670E-05	0.0002
U-235	8.691E-02	0.4280	5.417E-04	0.0027	0.000E+00	0.0000	1.071E-03	0.0053	5.084E-06	0.0000	8.202E-06	0.0000	5.466E-05	0.0003
U-238	1.628E-02	0.0802	3.733E-04	0.0018	0.000E+00	0.0000	5.989E-04	0.0029	5.085E-06	0.0000	8.223E-06	0.0000	3.455E-05	0.0002
Total	1.576E-01	0.7764	5.878E-03	0.0289	0.000E+00	0.0000	3.778E-02	0.1861	6.549E-05	0.0003	3.827E-05	0.0002	1.648E-03	0.0081

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.276E-03	0.0309
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.392E-02	0.3640
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.271E-03	0.0210
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.158E-03	0.0205
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.160E-03	0.0353
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.373E-03	0.0068
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.859E-02	0.4363
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.730E-02	0.0852
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.030E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.136E-03	0.0100	3.086E-04	0.0027	0.000E+00	0.0000	4.835E-04	0.0043	5.471E-07	0.0000	7.758E-08	0.0000	1.029E-04	0.0009
Np-237	5.248E-03	0.0463	7.466E-05	0.0007	0.000E+00	0.0000	2.308E-03	0.0204	3.898E-06	0.0000	1.373E-07	0.0000	2.471E-05	0.0002
Pu-239	3.389E-05	0.0003	1.359E-03	0.0120	0.000E+00	0.0000	2.136E-03	0.0189	4.824E-06	0.0000	1.701E-07	0.0000	4.561E-04	0.0040
Pu-240	1.824E-05	0.0002	1.258E-03	0.0111	0.000E+00	0.0000	1.977E-03	0.0175	4.466E-06	0.0000	1.576E-07	0.0000	4.222E-04	0.0037
Tc-99	7.328E-06	0.0001	1.341E-08	0.0000	0.000E+00	0.0000	4.153E-03	0.0367	2.421E-07	0.0000	6.584E-06	0.0001	9.566E-08	0.0000
U-234	1.992E-03	0.0176	3.385E-04	0.0030	0.000E+00	0.0000	6.266E-04	0.0055	4.457E-06	0.0000	7.275E-06	0.0001	3.108E-05	0.0003
U-235	7.228E-02	0.6381	7.825E-04	0.0069	0.000E+00	0.0000	1.865E-03	0.0165	4.098E-06	0.0000	6.563E-06	0.0001	8.889E-05	0.0008
U-238	1.290E-02	0.1139	2.966E-04	0.0026	0.000E+00	0.0000	4.757E-04	0.0042	4.039E-06	0.0000	6.532E-06	0.0001	2.745E-05	0.0002
Total	9.362E-02	0.8265	4.419E-03	0.0390	0.000E+00	0.0000	1.402E-02	0.1238	2.657E-05	0.0002	2.750E-05	0.0002	1.153E-03	0.0102

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.031E-03	0.0179
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.659E-03	0.0676
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.990E-03	0.0352
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.681E-03	0.0325
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.167E-03	0.0368
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.000E-03	0.0265
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.502E-02	0.6624
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.371E-02	0.1211
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.133E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.024E-03	2.031E-03	2.044E-03	2.090E-03	2.216E-03	2.628E-03	6.266E-03	2.025E-03
Am-241	Np-237+D	1.000E+00	9.312E-09	2.882E-08	6.796E-08	2.056E-07	6.065E-07	2.225E-06	9.280E-06	6.231E-06
Am-241	U-233	1.000E+00	1.987E-16	1.177E-15	5.731E-15	4.965E-14	4.319E-13	5.341E-12	5.464E-11	2.104E-10
Am-241	Th-229+D	1.000E+00	1.430E-19	2.109E-18	2.476E-17	6.910E-16	1.976E-14	1.211E-12	8.394E-11	1.398E-09
Am-241	ΣDSR (j)		2.024E-03	2.031E-03	2.044E-03	2.090E-03	2.216E-03	2.630E-03	6.276E-03	2.031E-03
Np-237+D	Np-237+D	1.000E+00	6.028E-02	6.026E-02	6.021E-02	6.008E-02	5.993E-02	6.294E-02	7.391E-02	7.642E-03
Np-237+D	U-233	1.000E+00	1.664E-09	4.342E-09	9.678E-09	2.879E-08	8.693E-08	3.265E-07	1.121E-06	1.437E-06
Np-237+D	Th-229+D	1.000E+00	1.744E-12	1.209E-11	6.450E-11	6.088E-10	6.018E-09	1.128E-07	2.686E-06	1.538E-05
Np-237+D	ΣDSR (j)		6.028E-02	6.026E-02	6.021E-02	6.008E-02	5.993E-02	6.294E-02	7.392E-02	7.659E-03
Pu-239	Pu-239	1.000E+00	1.968E-03	1.978E-03	1.997E-03	2.062E-03	2.250E-03	2.904E-03	4.271E-03	3.990E-03
Pu-239	U-235+D	1.000E+00	2.708E-12	8.232E-12	1.968E-11	6.419E-11	2.369E-10	1.825E-09	2.652E-08	7.616E-08
Pu-239	Pa-231	1.000E+00	1.994E-16	1.446E-15	7.774E-15	7.075E-14	6.152E-13	7.454E-12	8.916E-11	8.817E-10
Pu-239	Ac-227+D	1.000E+00	1.095E-18	1.461E-17	1.601E-16	4.161E-15	1.066E-13	4.858E-12	2.044E-10	2.336E-09
Pu-239	ΣDSR (j)		1.968E-03	1.978E-03	1.997E-03	2.062E-03	2.250E-03	2.904E-03	4.271E-03	3.990E-03
Pu-240	Pu-240	4.950E-08	9.734E-11	9.780E-11	9.871E-11	1.019E-10	1.110E-10	1.423E-10	2.058E-10	1.822E-10
Pu-240	Pu-240	1.000E+00	1.966E-03	1.976E-03	1.994E-03	2.059E-03	2.243E-03	2.875E-03	4.158E-03	3.681E-03
Pu-240	U-236	1.000E+00	7.843E-12	2.430E-11	5.770E-11	1.788E-10	5.604E-10	2.304E-09	9.735E-09	2.717E-08
Pu-240	Th-232	1.000E+00	4.619E-22	2.917E-21	1.503E-20	1.447E-19	1.551E-18	2.966E-17	5.009E-16	4.942E-15
Pu-240	Ra-228+D	1.000E+00	1.369E-21	2.050E-20	2.308E-19	5.306E-18	9.460E-17	2.153E-15	4.557E-14	4.674E-13
Pu-240	Th-228+D	1.000E+00	1.616E-22	4.610E-21	9.886E-20	4.697E-18	1.254E-16	3.321E-15	6.813E-14	7.081E-13
Pu-240	ΣDSR (j)		1.966E-03	1.976E-03	1.994E-03	2.059E-03	2.243E-03	2.875E-03	4.158E-03	3.681E-03
Tc-99	Tc-99	1.000E+00	7.513E-03	7.513E-03	7.513E-03	7.514E-03	7.517E-03	7.511E-03	7.160E-03	4.167E-03
U-234	U-234	1.000E+00	5.829E-04	5.853E-04	5.900E-04	6.063E-04	6.525E-04	8.109E-04	1.144E-03	9.052E-04
U-234	Th-230	1.000E+00	1.605E-09	4.451E-09	1.038E-08	3.401E-08	1.262E-07	7.367E-07	4.453E-06	1.319E-05
U-234	Ra-226+D	1.000E+00	2.181E-10	1.547E-09	8.297E-09	7.732E-08	7.304E-07	1.191E-05	2.215E-04	2.051E-03
U-234	Pb-210+D	1.000E+00	2.476E-13	2.459E-12	2.074E-11	4.152E-10	8.167E-09	1.988E-07	2.889E-06	3.094E-05
U-234	ΣDSR (j)		5.829E-04	5.853E-04	5.900E-04	6.064E-04	6.534E-04	8.237E-04	1.373E-03	3.000E-03
U-235+D	U-235+D	1.000E+00	5.511E-03	5.576E-03	5.709E-03	6.200E-03	7.858E-03	1.823E-02	8.649E-02	6.855E-02
U-235+D	Pa-231	1.000E+00	6.212E-07	1.911E-06	4.505E-06	1.369E-05	4.094E-05	1.501E-04	5.965E-04	1.732E-03
U-235+D	Ac-227+D	1.000E+00	4.219E-09	2.657E-08	1.336E-07	1.165E-06	9.873E-06	1.219E-04	1.508E-03	4.737E-03
U-235+D	ΣDSR (j)		5.512E-03	5.578E-03	5.714E-03	6.215E-03	7.909E-03	1.850E-02	8.859E-02	7.502E-02
U-238	U-238	5.400E-05	2.834E-08	2.845E-08	2.868E-08	2.946E-08	3.169E-08	3.923E-08	5.401E-08	4.280E-08
U-238+D	U-238+D	9.999E-01	3.109E-03	3.131E-03	3.176E-03	3.337E-03	3.845E-03	6.356E-03	1.730E-02	1.371E-02
U-238+D	U-234	9.999E-01	8.268E-10	2.489E-09	5.854E-09	1.805E-08	5.642E-08	2.310E-07	9.753E-07	2.571E-06
U-238+D	Th-230	9.999E-01	1.641E-15	1.031E-14	5.303E-14	5.099E-13	5.458E-12	1.044E-10	1.866E-09	1.771E-08
U-238+D	Ra-226+D	9.999E-01	1.539E-16	2.343E-15	2.777E-14	7.679E-13	2.104E-11	1.129E-09	6.255E-08	1.902E-06
U-238+D	Pb-210+D	9.999E-01	1.597E-19	3.275E-18	5.800E-17	3.289E-15	1.875E-13	1.591E-11	7.482E-10	2.786E-08
U-238+D	ΣDSR (j)		3.109E-03	3.131E-03	3.176E-03	3.337E-03	3.845E-03	6.356E-03	1.730E-02	1.371E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Root CSM - AF 10 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		1.235E+04	1.231E+04	1.223E+04	1.196E+04	1.128E+04	9.505E+03	3.984E+03	1.231E+04
Np-237		4.147E+02	4.149E+02	4.152E+02	4.161E+02	4.172E+02	3.972E+02	3.382E+02	3.264E+03
Pu-239		1.270E+04	1.264E+04	1.252E+04	1.212E+04	1.111E+04	8.609E+03	5.853E+03	6.265E+03
Pu-240		1.271E+04	1.265E+04	1.254E+04	1.214E+04	1.115E+04	8.694E+03	6.012E+03	6.792E+03
Tc-99		3.328E+03	3.328E+03	3.327E+03	3.327E+03	3.326E+03	3.329E+03	3.492E+03	6.000E+03
U-234		4.289E+04	4.271E+04	4.237E+04	4.123E+04	3.826E+04	3.035E+04	1.820E+04	8.333E+03
U-235		4.536E+03	4.482E+03	4.375E+03	4.022E+03	3.161E+03	1.352E+03	2.822E+02	3.332E+02
U-238		8.041E+03	7.984E+03	7.872E+03	7.491E+03	6.502E+03	3.933E+03	1.445E+03	1.823E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 249.5 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	249.8 ± 0.5	6.802E-03	3.675E+03	6.794E-03	3.680E+03
Np-237	1.000E+00	247.9 ± 0.5	8.734E-02	2.862E+02	8.705E-02	2.872E+02
Pu-239	1.000E+00	249.9 ± 0.5	4.292E-03	5.825E+03	4.291E-03	5.827E+03
Pu-240	1.000E+00	249.9 ± 0.5	4.195E-03	5.960E+03	4.193E-03	5.962E+03
Tc-99	1.000E+00	44.97 ± 0.09	7.517E-03	3.326E+03	7.444E-03	3.358E+03
U-234	1.000E+00	1.000E+03	3.000E-03	8.333E+03	1.324E-03	1.888E+04
U-235	1.000E+00	249.9 ± 0.5	8.968E-02	2.788E+02	8.963E-02	2.789E+02
U-238	1.000E+00	247.9 ± 0.5	1.765E-02	1.417E+03	1.759E-02	1.421E+03

Summary : Hematite - Root CSM - AF 10 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.024E-03	2.031E-03	2.044E-03	2.090E-03	2.216E-03	2.628E-03	6.266E-03	2.025E-03
Np-237	Am-241	1.000E+00	9.312E-09	2.882E-08	6.796E-08	2.056E-07	6.065E-07	2.225E-06	9.280E-06	6.231E-06
Np-237	Np-237	1.000E+00	6.028E-02	6.026E-02	6.021E-02	6.008E-02	5.993E-02	6.294E-02	7.391E-02	7.642E-03
Np-237	ΣDOSE (j)		6.028E-02	6.026E-02	6.021E-02	6.008E-02	5.993E-02	6.294E-02	7.392E-02	7.649E-03
U-233	Am-241	1.000E+00	1.987E-16	1.177E-15	5.731E-15	4.965E-14	4.319E-13	5.341E-12	5.464E-11	2.104E-10
U-233	Np-237	1.000E+00	1.664E-09	4.342E-09	9.678E-09	2.879E-08	8.693E-08	3.265E-07	1.121E-06	1.437E-06
U-233	ΣDOSE (j)		1.664E-09	4.342E-09	9.678E-09	2.879E-08	8.693E-08	3.265E-07	1.121E-06	1.437E-06
Th-229	Am-241	1.000E+00	1.430E-19	2.109E-18	2.476E-17	6.910E-16	1.976E-14	1.211E-12	8.394E-11	1.398E-09
Th-229	Np-237	1.000E+00	1.744E-12	1.209E-11	6.450E-11	6.088E-10	6.018E-09	1.128E-07	2.686E-06	1.538E-05
Th-229	ΣDOSE (j)		1.744E-12	1.209E-11	6.450E-11	6.088E-10	6.018E-09	1.128E-07	2.686E-06	1.538E-05
Pu-239	Pu-239	1.000E+00	1.968E-03	1.978E-03	1.997E-03	2.062E-03	2.250E-03	2.904E-03	4.271E-03	3.990E-03
U-235	Pu-239	1.000E+00	2.708E-12	8.232E-12	1.968E-11	6.419E-11	2.369E-10	1.825E-09	2.652E-08	7.616E-08
U-235	U-235	1.000E+00	5.511E-03	5.576E-03	5.709E-03	6.200E-03	7.858E-03	1.823E-02	8.649E-02	6.855E-02
U-235	ΣDOSE (j)		5.511E-03	5.576E-03	5.709E-03	6.200E-03	7.858E-03	1.823E-02	8.649E-02	6.855E-02
Pa-231	Pu-239	1.000E+00	1.994E-16	1.446E-15	7.774E-15	7.075E-14	6.152E-13	7.454E-12	8.916E-11	8.817E-10
Pa-231	U-235	1.000E+00	6.212E-07	1.911E-06	4.505E-06	1.369E-05	4.094E-05	1.501E-04	5.965E-04	1.732E-03
Pa-231	ΣDOSE (j)		6.212E-07	1.911E-06	4.505E-06	1.369E-05	4.094E-05	1.501E-04	5.965E-04	1.732E-03
Ac-227	Pu-239	1.000E+00	1.095E-18	1.461E-17	1.601E-16	4.161E-15	1.066E-13	4.858E-12	2.044E-10	2.336E-09
Ac-227	U-235	1.000E+00	4.219E-09	2.657E-08	1.336E-07	1.165E-06	9.873E-06	1.219E-04	1.508E-03	4.737E-03
Ac-227	ΣDOSE (j)		4.219E-09	2.657E-08	1.336E-07	1.165E-06	9.873E-06	1.219E-04	1.508E-03	4.737E-03
Pu-240	Pu-240	4.950E-08	9.734E-11	9.780E-11	9.871E-11	1.019E-10	1.110E-10	1.423E-10	2.058E-10	1.822E-10
Pu-240	Pu-240	1.000E+00	1.966E-03	1.976E-03	1.994E-03	2.059E-03	2.243E-03	2.875E-03	4.158E-03	3.681E-03
Pu-240	ΣDOSE (j)		1.966E-03	1.976E-03	1.994E-03	2.059E-03	2.243E-03	2.875E-03	4.158E-03	3.681E-03
U-236	Pu-240	1.000E+00	7.843E-12	2.430E-11	5.770E-11	1.788E-10	5.604E-10	2.304E-09	9.735E-09	2.717E-08
Th-232	Pu-240	1.000E+00	4.619E-22	2.917E-21	1.503E-20	1.447E-19	1.551E-18	2.966E-17	5.009E-16	4.942E-15
Ra-228	Pu-240	1.000E+00	1.369E-21	2.050E-20	2.308E-19	5.306E-18	9.460E-17	2.153E-15	4.557E-14	4.674E-13
Th-228	Pu-240	1.000E+00	1.616E-22	4.610E-21	9.886E-20	4.697E-18	1.254E-16	3.321E-15	6.813E-14	7.081E-13
Tc-99	Tc-99	1.000E+00	7.513E-03	7.513E-03	7.513E-03	7.514E-03	7.517E-03	7.511E-03	7.160E-03	4.167E-03
U-234	U-234	1.000E+00	5.829E-04	5.853E-04	5.900E-04	6.063E-04	6.525E-04	8.109E-04	1.144E-03	9.052E-04
U-234	U-238	9.999E-01	8.268E-10	2.489E-09	5.854E-09	1.805E-08	5.642E-08	2.310E-07	9.753E-07	2.571E-06
U-234	ΣDOSE (j)		5.829E-04	5.853E-04	5.900E-04	6.063E-04	6.526E-04	8.111E-04	1.145E-03	9.077E-04
Th-230	U-234	1.000E+00	1.605E-09	4.451E-09	1.038E-08	3.401E-08	1.262E-07	7.367E-07	4.453E-06	1.319E-05
Th-230	U-238	9.999E-01	1.641E-15	1.031E-14	5.303E-14	5.099E-13	5.458E-12	1.044E-10	1.866E-09	1.771E-08
Th-230	ΣDOSE (j)		1.605E-09	4.451E-09	1.038E-08	3.401E-08	1.262E-07	7.368E-07	4.455E-06	1.321E-05

Summary : Hematite - Root CSM - AF 10 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	2.181E-10	1.547E-09	8.297E-09	7.732E-08	7.304E-07	1.191E-05	2.215E-04	2.051E-03
Ra-226	U-238	9.999E-01	1.539E-16	2.343E-15	2.777E-14	7.679E-13	2.104E-11	1.129E-09	6.255E-08	1.902E-06
Ra-226	ΣDOSE(j)		2.181E-10	1.547E-09	8.297E-09	7.732E-08	7.304E-07	1.191E-05	2.215E-04	2.053E-03
Pb-210	U-234	1.000E+00	2.476E-13	2.459E-12	2.074E-11	4.152E-10	8.167E-09	1.988E-07	2.889E-06	3.094E-05
Pb-210	U-238	9.999E-01	1.597E-19	3.275E-18	5.800E-17	3.289E-15	1.875E-13	1.591E-11	7.482E-10	2.786E-08
Pb-210	ΣDOSE(j)		2.476E-13	2.459E-12	2.074E-11	4.152E-10	8.167E-09	1.988E-07	2.890E-06	3.097E-05
U-238	U-238	5.400E-05	2.834E-08	2.845E-08	2.868E-08	2.946E-08	3.169E-08	3.923E-08	5.401E-08	4.280E-08
U-238	U-238	9.999E-01	3.109E-03	3.131E-03	3.176E-03	3.337E-03	3.845E-03	6.356E-03	1.730E-02	1.371E-02
U-238	ΣDOSE(j)		3.109E-03	3.131E-03	3.176E-03	3.337E-03	3.845E-03	6.356E-03	1.730E-02	1.371E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 10 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.09 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Root CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Root CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Root CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Root CSM - AF 100 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Root CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Root CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Root CSM - AF 100 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Root CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Root CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	100.00 square meters	Am-241	1.000E+00
Thickness:	1.35 meters	Np-237	1.000E+00
Cover Depth:	0.15 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr							
Basic Radiation Dose Limit = 2.500E+01 mrem/yr							
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)							
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	6.641E-01	6.633E-01	6.616E-01	6.560E-01	6.414E-01	6.087E-01	6.662E-01
M(t):	2.656E-02	2.653E-02	2.647E-02	2.624E-02	2.565E-02	2.435E-02	2.665E-02
Maximum TDOSE(t): 7.285E-01 mrem/yr at t = 249.5 ± 0.5 years							

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.495E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.105E-03	0.0084	1.337E-03	0.0018	0.000E+00	0.0000	1.620E-02	0.0222	1.829E-05	0.0000	2.601E-06	0.0000	3.451E-03	0.0047
Np-237	9.958E-02	0.1367	1.083E-03	0.0015	0.000E+00	0.0000	2.628E-01	0.3608	4.431E-04	0.0006	1.457E-05	0.0000	2.804E-03	0.0038
Pu-239	5.892E-05	0.0001	1.887E-03	0.0026	0.000E+00	0.0000	2.298E-02	0.0315	5.185E-05	0.0001	1.828E-06	0.0000	4.902E-03	0.0067
Pu-240	2.923E-05	0.0000	1.851E-03	0.0025	0.000E+00	0.0000	2.254E-02	0.0309	5.085E-05	0.0001	1.794E-06	0.0000	4.809E-03	0.0066
Tc-99	2.151E-05	0.0000	3.091E-08	0.0000	0.000E+00	0.0000	7.419E-02	0.1018	4.325E-06	0.0000	1.176E-04	0.0002	1.708E-06	0.0000
U-234	3.312E-04	0.0005	5.503E-04	0.0008	0.000E+00	0.0000	6.503E-03	0.0089	5.450E-05	0.0001	8.819E-05	0.0001	3.721E-04	0.0005
U-235	1.468E-01	0.2015	6.729E-04	0.0009	0.000E+00	0.0000	1.004E-02	0.0138	5.161E-05	0.0001	8.331E-05	0.0001	5.174E-04	0.0007
U-238	2.799E-02	0.0384	4.900E-04	0.0007	0.000E+00	0.0000	6.089E-03	0.0084	5.166E-05	0.0001	8.356E-05	0.0001	3.511E-04	0.0005
Total	2.809E-01	0.3856	7.871E-03	0.0108	0.000E+00	0.0000	4.214E-01	0.5784	7.262E-04	0.0010	3.935E-04	0.0005	1.721E-02	0.0236

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.495E+02 years

Water Dependent Pathways														
Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.711E-02	0.0372
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.668E-01	0.5035
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.988E-02	0.0410
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.928E-02	0.0402
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.433E-02	0.1020
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.899E-03	0.0108
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.582E-01	0.2171
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.506E-02	0.0481
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.285E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.351E-06	0.0000	4.000E-06	0.0000	0.000E+00	0.0000	2.016E-02	0.0304	6.391E-07	0.0000	7.116E-08	0.0000	1.032E-05	0.0000
Np-237	1.216E-02	0.0183	4.859E-06	0.0000	0.000E+00	0.0000	4.919E-01	0.7408	2.898E-04	0.0004	7.804E-06	0.0000	1.259E-05	0.0000
Pu-239	1.956E-06	0.0000	3.869E-06	0.0000	0.000E+00	0.0000	1.962E-02	0.0295	1.244E-06	0.0000	3.429E-08	0.0000	1.005E-05	0.0000
Pu-240	4.434E-08	0.0000	3.868E-06	0.0000	0.000E+00	0.0000	1.962E-02	0.0295	1.244E-06	0.0000	3.428E-08	0.0000	1.005E-05	0.0000
Tc-99	1.195E-07	0.0000	7.499E-11	0.0000	0.000E+00	0.0000	7.500E-02	0.1129	4.355E-06	0.0000	1.183E-04	0.0002	4.143E-09	0.0000
U-234	5.408E-07	0.0000	1.190E-06	0.0000	0.000E+00	0.0000	5.804E-03	0.0087	4.521E-06	0.0000	5.668E-06	0.0000	8.033E-07	0.0000
U-235	5.221E-03	0.0079	1.109E-06	0.0000	0.000E+00	0.0000	5.489E-03	0.0083	4.272E-06	0.0000	5.354E-06	0.0000	7.593E-07	0.0000
U-238	3.041E-03	0.0046	1.064E-06	0.0000	0.000E+00	0.0000	5.511E-03	0.0083	4.293E-06	0.0000	5.381E-06	0.0000	7.627E-07	0.0000
Total	2.042E-02	0.0308	1.996E-05	0.0000	0.000E+00	0.0000	6.432E-01	0.9685	3.103E-04	0.0005	1.426E-04	0.0002	4.534E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.018E-02	0.0304
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.044E-01	0.7595
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E-02	0.0296
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E-02	0.0296
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-02	0.1131
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.817E-03	0.0088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.072E-02	0.0161
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.563E-03	0.0129
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.641E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 100 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.457E-06	0.0000	1.198E-05	0.0000	0.000E+00	0.0000	2.015E-02	0.0304	7.443E-07	0.0000	8.633E-08	0.0000	3.093E-05	0.0000
Np-237	1.226E-02	0.0185	1.454E-05	0.0000	0.000E+00	0.0000	4.907E-01	0.7399	2.916E-04	0.0004	7.878E-06	0.0000	3.766E-05	0.0001
Pu-239	1.982E-06	0.0000	1.160E-05	0.0000	0.000E+00	0.0000	1.964E-02	0.0296	1.451E-06	0.0000	4.165E-08	0.0000	3.015E-05	0.0000
Pu-240	4.532E-08	0.0000	1.160E-05	0.0000	0.000E+00	0.0000	1.964E-02	0.0296	1.451E-06	0.0000	4.165E-08	0.0000	3.014E-05	0.0000
Tc-99	1.220E-07	0.0000	2.248E-10	0.0000	0.000E+00	0.0000	7.500E-02	0.1131	4.355E-06	0.0000	1.183E-04	0.0002	1.242E-08	0.0000
U-234	5.528E-07	0.0000	3.570E-06	0.0000	0.000E+00	0.0000	5.807E-03	0.0088	4.738E-06	0.0000	6.026E-06	0.0000	2.409E-06	0.0000
U-235	5.293E-03	0.0080	3.327E-06	0.0000	0.000E+00	0.0000	5.504E-03	0.0083	4.476E-06	0.0000	5.693E-06	0.0000	2.279E-06	0.0000
U-238	3.068E-03	0.0046	3.192E-06	0.0000	0.000E+00	0.0000	5.513E-03	0.0083	4.498E-06	0.0000	5.721E-06	0.0000	2.288E-06	0.0000
Total	2.063E-02	0.0311	5.982E-05	0.0001	0.000E+00	0.0000	6.420E-01	0.9679	3.134E-04	0.0005	1.438E-04	0.0002	1.359E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.019E-02	0.0304
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.034E-01	0.7589
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.968E-02	0.0297
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.968E-02	0.0297
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-02	0.1133
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.824E-03	0.0088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.081E-02	0.0163
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.597E-03	0.0130
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.633E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.680E-06	0.0000	2.787E-05	0.0000	0.000E+00	0.0000	2.011E-02	0.0304	9.548E-07	0.0000	1.165E-07	0.0000	7.193E-05	0.0001
Np-237	1.248E-02	0.0189	3.370E-05	0.0001	0.000E+00	0.0000	4.883E-01	0.7381	2.954E-04	0.0004	8.024E-06	0.0000	8.731E-05	0.0001
Pu-239	2.037E-06	0.0000	2.707E-05	0.0000	0.000E+00	0.0000	1.967E-02	0.0297	1.866E-06	0.0000	5.639E-08	0.0000	7.033E-05	0.0001
Pu-240	4.735E-08	0.0000	2.707E-05	0.0000	0.000E+00	0.0000	1.966E-02	0.0297	1.866E-06	0.0000	5.637E-08	0.0000	7.031E-05	0.0001
Tc-99	1.272E-07	0.0000	5.238E-10	0.0000	0.000E+00	0.0000	7.501E-02	0.1134	4.355E-06	0.0000	1.183E-04	0.0002	2.894E-08	0.0000
U-234	5.817E-07	0.0000	8.324E-06	0.0000	0.000E+00	0.0000	5.812E-03	0.0088	5.171E-06	0.0000	6.742E-06	0.0000	5.618E-06	0.0000
U-235	5.441E-03	0.0082	7.764E-06	0.0000	0.000E+00	0.0000	5.534E-03	0.0084	4.886E-06	0.0000	6.369E-06	0.0000	5.324E-06	0.0000
U-238	3.122E-03	0.0047	7.443E-06	0.0000	0.000E+00	0.0000	5.519E-03	0.0083	4.910E-06	0.0000	6.401E-06	0.0000	5.334E-06	0.0000
Total	2.105E-02	0.0318	1.392E-04	0.0002	0.000E+00	0.0000	6.397E-01	0.9668	3.194E-04	0.0005	1.460E-04	0.0002	3.162E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.022E-02	0.0306
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.013E-01	0.7576
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.977E-02	0.0299
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.976E-02	0.0299
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-02	0.1136
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.839E-03	0.0088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.100E-02	0.0166
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.665E-03	0.0131
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.616E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 100 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.572E-06	0.0000	8.267E-05	0.0001	0.000E+00	0.0000	2.000E-02	0.0305	1.681E-06	0.0000	2.206E-07	0.0000	2.134E-04	0.0003
Np-237	1.327E-02	0.0202	9.885E-05	0.0002	0.000E+00	0.0000	4.801E-01	0.7318	3.079E-04	0.0005	8.517E-06	0.0000	2.561E-04	0.0004
Pu-239	2.240E-06	0.0000	8.116E-05	0.0001	0.000E+00	0.0000	1.976E-02	0.0301	3.320E-06	0.0000	1.079E-07	0.0000	2.109E-04	0.0003
Pu-240	5.521E-08	0.0000	8.110E-05	0.0001	0.000E+00	0.0000	1.975E-02	0.0301	3.317E-06	0.0000	1.078E-07	0.0000	2.107E-04	0.0003
Tc-99	1.469E-07	0.0000	1.563E-09	0.0000	0.000E+00	0.0000	7.502E-02	0.1144	4.357E-06	0.0000	1.183E-04	0.0002	8.635E-08	0.0000
U-234	7.389E-07	0.0000	2.492E-05	0.0000	0.000E+00	0.0000	5.831E-03	0.0089	6.685E-06	0.0000	9.241E-06	0.0000	1.682E-05	0.0000
U-235	5.991E-03	0.0091	2.331E-05	0.0000	0.000E+00	0.0000	5.643E-03	0.0086	6.317E-06	0.0000	8.731E-06	0.0000	1.605E-05	0.0000
U-238	3.321E-03	0.0051	2.228E-05	0.0000	0.000E+00	0.0000	5.537E-03	0.0084	6.348E-06	0.0000	8.774E-06	0.0000	1.597E-05	0.0000
Total	2.259E-02	0.0344	4.143E-04	0.0006	0.000E+00	0.0000	6.316E-01	0.9627	3.399E-04	0.0005	1.540E-04	0.0002	9.399E-04	0.0014

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.030E-02	0.0309
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.940E-01	0.7530
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.006E-02	0.0306
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.004E-02	0.0305
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.514E-02	0.1145
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.890E-03	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.169E-02	0.0178
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.911E-03	0.0136
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.560E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.428E-06	0.0000	2.325E-04	0.0004	0.000E+00	0.0000	1.968E-02	0.0307	3.666E-06	0.0000	5.053E-07	0.0000	6.001E-04	0.0009
Np-237	1.583E-02	0.0247	2.691E-04	0.0004	0.000E+00	0.0000	4.571E-01	0.7127	3.399E-04	0.0005	9.785E-06	0.0000	6.971E-04	0.0011
Pu-239	2.939E-06	0.0000	2.353E-04	0.0004	0.000E+00	0.0000	2.004E-02	0.0312	7.461E-06	0.0000	2.547E-07	0.0000	6.113E-04	0.0010
Pu-240	8.561E-08	0.0000	2.348E-04	0.0004	0.000E+00	0.0000	1.999E-02	0.0312	7.444E-06	0.0000	2.542E-07	0.0000	6.098E-04	0.0010
Tc-99	2.219E-07	0.0000	4.470E-09	0.0000	0.000E+00	0.0000	7.504E-02	0.1170	4.359E-06	0.0000	1.184E-04	0.0002	2.470E-07	0.0000
U-234	1.777E-06	0.0000	7.193E-05	0.0001	0.000E+00	0.0000	5.886E-03	0.0092	1.097E-05	0.0000	1.632E-05	0.0000	4.854E-05	0.0001
U-235	7.893E-03	0.0123	6.829E-05	0.0001	0.000E+00	0.0000	5.965E-03	0.0093	1.037E-05	0.0000	1.542E-05	0.0000	4.761E-05	0.0001
U-238	3.962E-03	0.0062	6.429E-05	0.0001	0.000E+00	0.0000	5.588E-03	0.0087	1.042E-05	0.0000	1.549E-05	0.0000	4.607E-05	0.0001
Total	2.770E-02	0.0432	1.176E-03	0.0018	0.000E+00	0.0000	6.092E-01	0.9499	3.945E-04	0.0006	1.764E-04	0.0003	2.661E-03	0.0041

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.052E-02	0.0320
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.742E-01	0.7394
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.089E-02	0.0326
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.084E-02	0.0325
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.517E-02	0.1172
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.035E-03	0.0094
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.400E-02	0.0218
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.686E-03	0.0151
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.414E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 100 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.915E-05	0.0001	6.844E-04	0.0011	0.000E+00	0.0000	1.854E-02	0.0305	9.652E-06	0.0000	1.363E-06	0.0000	1.766E-03	0.0029
Np-237	2.941E-02	0.0483	7.068E-04	0.0012	0.000E+00	0.0000	3.842E-01	0.6312	4.140E-04	0.0007	1.284E-05	0.0000	1.831E-03	0.0030
Pu-239	7.605E-06	0.0000	7.701E-04	0.0013	0.000E+00	0.0000	2.099E-02	0.0345	2.183E-05	0.0000	7.642E-07	0.0000	2.001E-03	0.0033
Pu-240	3.974E-07	0.0000	7.642E-04	0.0013	0.000E+00	0.0000	2.083E-02	0.0342	2.166E-05	0.0000	7.584E-07	0.0000	1.985E-03	0.0033
Tc-99	9.401E-07	0.0000	1.395E-08	0.0000	0.000E+00	0.0000	7.498E-02	0.1232	4.361E-06	0.0000	1.185E-04	0.0002	7.709E-07	0.0000
U-234	1.860E-05	0.0000	2.319E-04	0.0004	0.000E+00	0.0000	6.078E-03	0.0100	2.554E-05	0.0000	4.036E-05	0.0001	1.565E-04	0.0003
U-235	2.078E-02	0.0341	2.383E-04	0.0004	0.000E+00	0.0000	7.182E-03	0.0118	2.416E-05	0.0000	3.816E-05	0.0001	1.725E-04	0.0003
U-238	7.406E-03	0.0122	2.070E-04	0.0003	0.000E+00	0.0000	5.759E-03	0.0095	2.425E-05	0.0000	3.832E-05	0.0001	1.484E-04	0.0002
Total	5.769E-02	0.0948	3.603E-03	0.0059	0.000E+00	0.0000	5.385E-01	0.8848	5.454E-04	0.0009	2.511E-04	0.0004	8.061E-03	0.0132

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.108E-02	0.0346
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.166E-01	0.6844
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.379E-02	0.0391
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.360E-02	0.0388
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.510E-02	0.1234
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.551E-03	0.0108
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.843E-02	0.0467
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.358E-02	0.0223
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.087E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.660E-03	0.0085	1.233E-03	0.0019	0.000E+00	0.0000	1.493E-02	0.0224	1.688E-05	0.0000	2.399E-06	0.0000	3.182E-03	0.0048
Np-237	8.457E-02	0.1269	9.199E-04	0.0014	0.000E+00	0.0000	2.232E-01	0.3350	3.764E-04	0.0006	1.239E-05	0.0000	2.382E-03	0.0036
Pu-239	5.964E-05	0.0001	1.879E-03	0.0028	0.000E+00	0.0000	2.287E-02	0.0343	5.163E-05	0.0001	1.820E-06	0.0000	4.881E-03	0.0073
Pu-240	3.141E-05	0.0000	1.836E-03	0.0028	0.000E+00	0.0000	2.234E-02	0.0335	5.044E-05	0.0001	1.779E-06	0.0000	4.769E-03	0.0072
Tc-99	2.086E-05	0.0000	2.974E-08	0.0000	0.000E+00	0.0000	7.135E-02	0.1071	4.160E-06	0.0000	1.131E-04	0.0002	1.643E-06	0.0000
U-234	4.401E-04	0.0007	5.420E-04	0.0008	0.000E+00	0.0000	6.438E-03	0.0097	5.370E-05	0.0001	8.690E-05	0.0001	3.670E-04	0.0006
U-235	1.450E-01	0.2177	6.996E-04	0.0011	0.000E+00	0.0000	1.071E-02	0.0161	5.084E-05	0.0001	8.202E-05	0.0001	5.466E-04	0.0008
U-238	2.752E-02	0.0413	4.822E-04	0.0007	0.000E+00	0.0000	5.989E-03	0.0090	5.085E-05	0.0001	8.223E-05	0.0001	3.455E-04	0.0005
Total	2.633E-01	0.3953	7.591E-03	0.0114	0.000E+00	0.0000	3.778E-01	0.5671	6.549E-04	0.0010	3.827E-04	0.0006	1.648E-02	0.0247

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.503E-02	0.0376
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.114E-01	0.4674
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.974E-02	0.0446
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.903E-02	0.0436
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.149E-02	0.1073
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.928E-03	0.0119
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.571E-01	0.2358
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.447E-02	0.0517
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.662E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 100 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.833E-03	0.0058	3.986E-04	0.0013	0.000E+00	0.0000	4.835E-03	0.0154	5.471E-06	0.0000	7.758E-07	0.0000	1.029E-03	0.0033
Np-237	8.769E-03	0.0279	9.642E-05	0.0003	0.000E+00	0.0000	2.308E-02	0.0734	3.898E-05	0.0001	1.373E-06	0.0000	2.471E-04	0.0008
Pu-239	5.581E-05	0.0002	1.756E-03	0.0056	0.000E+00	0.0000	2.136E-02	0.0679	4.824E-05	0.0002	1.701E-06	0.0000	4.561E-03	0.0145
Pu-240	2.780E-05	0.0001	1.625E-03	0.0052	0.000E+00	0.0000	1.977E-02	0.0629	4.466E-05	0.0001	1.576E-06	0.0000	4.222E-03	0.0134
Tc-99	1.214E-05	0.0000	1.731E-08	0.0000	0.000E+00	0.0000	4.153E-02	0.1320	2.421E-06	0.0000	6.584E-05	0.0002	9.566E-07	0.0000
U-234	3.417E-03	0.0109	4.372E-04	0.0014	0.000E+00	0.0000	6.266E-03	0.0199	4.457E-05	0.0001	7.275E-05	0.0002	3.108E-04	0.0010
U-235	1.206E-01	0.3834	1.011E-03	0.0032	0.000E+00	0.0000	1.865E-02	0.0593	4.099E-05	0.0001	6.563E-05	0.0002	8.889E-04	0.0028
U-238	2.182E-02	0.0694	3.830E-04	0.0012	0.000E+00	0.0000	4.757E-03	0.0151	4.039E-05	0.0001	6.532E-05	0.0002	2.745E-04	0.0009
Total	1.566E-01	0.4977	5.707E-03	0.0181	0.000E+00	0.0000	1.402E-01	0.4458	2.657E-04	0.0008	2.750E-04	0.0009	1.153E-02	0.0367

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.102E-03	0.0258
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.223E-02	0.1024
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.778E-02	0.0883
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.569E-02	0.0817
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.161E-02	0.1323
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.055E-02	0.0335
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.413E-01	0.4491
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.734E-02	0.0869
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.146E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 100 m^2

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.018E-02	2.019E-02	2.022E-02	2.030E-02	2.052E-02	2.106E-02	2.499E-02	8.075E-03
Am-241	Np-237+D	1.000E+00	7.715E-08	2.399E-07	5.649E-07	1.690E-06	4.798E-06	1.473E-05	3.909E-05	2.625E-05
Am-241	U-233	1.000E+00	1.966E-15	1.160E-14	5.610E-14	4.764E-13	3.934E-12	4.177E-11	3.316E-10	1.276E-09
Am-241	Th-229+D	1.000E+00	3.247E-19	4.398E-18	4.950E-17	1.333E-15	3.632E-14	2.012E-12	1.510E-10	2.516E-09
Am-241	ΣDSR (j)		2.018E-02	2.019E-02	2.022E-02	2.030E-02	2.052E-02	2.108E-02	2.503E-02	8.102E-03
Np-237+D	Np-237+D	1.000E+00	5.044E-01	5.034E-01	5.013E-01	4.940E-01	4.742E-01	4.166E-01	3.114E-01	3.219E-02
Np-237+D	U-233	1.000E+00	1.644E-08	4.273E-08	9.466E-08	2.761E-07	7.915E-07	2.553E-06	6.798E-06	8.717E-06
Np-237+D	Th-229+D	1.000E+00	3.801E-12	2.465E-11	1.277E-10	1.171E-09	1.105E-08	1.874E-07	4.833E-06	2.768E-05
Np-237+D	ΣDSR (j)		5.044E-01	5.034E-01	5.013E-01	4.940E-01	4.742E-01	4.166E-01	3.114E-01	3.223E-02
Pu-239	Pu-239	1.000E+00	1.964E-02	1.968E-02	1.977E-02	2.006E-02	2.089E-02	2.379E-02	2.974E-02	2.778E-02
Pu-239	U-235+D	1.000E+00	5.164E-12	1.583E-11	3.766E-11	1.195E-10	4.093E-10	2.684E-09	4.585E-08	1.317E-07
Pu-239	Pa-231	1.000E+00	1.927E-15	1.398E-14	7.513E-14	6.812E-13	5.853E-12	6.732E-11	6.845E-10	6.768E-09
Pu-239	Ac-227+D	1.000E+00	5.376E-18	6.212E-17	6.098E-16	1.424E-14	3.211E-13	1.111E-11	4.091E-10	4.675E-09
Pu-239	ΣDSR (j)		1.964E-02	1.968E-02	1.977E-02	2.006E-02	2.089E-02	2.379E-02	2.974E-02	2.778E-02
Pu-240	Pu-240	4.950E-08	9.721E-10	9.741E-10	9.781E-10	9.920E-10	1.032E-09	1.168E-09	1.437E-09	1.272E-09
Pu-240	Pu-240	1.000E+00	1.964E-02	1.968E-02	1.976E-02	2.004E-02	2.084E-02	2.360E-02	2.903E-02	2.569E-02
Pu-240	U-236	1.000E+00	7.825E-11	2.419E-10	5.712E-10	1.737E-09	5.185E-09	1.857E-08	6.396E-08	1.785E-07
Pu-240	Th-232	1.000E+00	4.581E-21	2.862E-20	1.439E-19	1.277E-18	1.140E-17	1.509E-16	1.847E-15	1.822E-14
Pu-240	Ra-228+D	1.000E+00	4.927E-21	7.608E-20	8.657E-19	1.968E-17	3.325E-16	6.304E-15	1.130E-13	1.159E-12
Pu-240	Th-228+D	1.000E+00	2.329E-22	6.385E-21	1.339E-19	6.300E-18	1.700E-16	4.764E-15	1.187E-13	1.234E-12
Pu-240	ΣDSR (j)		1.964E-02	1.968E-02	1.976E-02	2.004E-02	2.084E-02	2.360E-02	2.903E-02	2.569E-02
Tc-99	Tc-99	1.000E+00	7.513E-02	7.513E-02	7.513E-02	7.514E-02	7.517E-02	7.510E-02	7.149E-02	4.161E-02
U-234	U-234	1.000E+00	5.817E-03	5.824E-03	5.838E-03	5.889E-03	6.032E-03	6.519E-03	7.416E-03	5.865E-03
U-234	Th-230	1.000E+00	1.584E-08	4.341E-08	9.873E-08	2.986E-07	9.225E-07	3.720E-06	1.575E-05	4.665E-05
U-234	Ra-226+D	1.000E+00	5.528E-10	4.010E-09	2.163E-08	1.996E-07	1.809E-06	2.611E-05	4.684E-04	4.338E-03
U-234	Pb-210+D	1.000E+00	2.475E-12	2.457E-11	2.072E-10	4.145E-09	8.148E-08	1.977E-06	2.795E-05	2.993E-04
U-234	ΣDSR (j)		5.817E-03	5.824E-03	5.839E-03	5.890E-03	6.035E-03	6.551E-03	7.928E-03	1.055E-02
U-235+D	U-235+D	1.000E+00	1.072E-02	1.079E-02	1.096E-02	1.155E-02	1.358E-02	2.680E-02	1.495E-01	1.185E-01
U-235+D	Pa-231	1.000E+00	6.008E-06	1.848E-05	4.354E-05	1.319E-04	3.895E-04	1.356E-03	4.579E-03	1.329E-02
U-235+D	Ac-227+D	1.000E+00	1.962E-08	1.073E-07	4.926E-07	3.936E-06	2.960E-05	2.784E-04	3.018E-03	9.478E-03
U-235+D	ΣDSR (j)		1.072E-02	1.081E-02	1.100E-02	1.169E-02	1.400E-02	2.843E-02	1.571E-01	1.413E-01
U-238	U-238	5.400E-05	2.830E-07	2.833E-07	2.841E-07	2.865E-07	2.935E-07	3.170E-07	3.583E-07	2.839E-07
U-238+D	U-238+D	9.999E-01	8.563E-03	8.597E-03	8.665E-03	8.910E-03	9.685E-03	1.358E-02	3.447E-02	2.732E-02
U-238+D	U-234	9.999E-01	8.246E-09	2.477E-08	5.793E-08	1.753E-07	5.216E-07	1.857E-06	6.320E-06	1.666E-05
U-238+D	Th-230	9.999E-01	1.620E-14	1.006E-13	5.049E-13	4.481E-12	3.993E-11	5.275E-10	6.603E-09	6.264E-08
U-238+D	Ra-226+D	9.999E-01	3.849E-16	6.024E-15	7.212E-14	1.979E-12	5.210E-11	2.475E-09	1.323E-07	4.024E-06
U-238+D	Pb-210+D	9.999E-01	1.597E-18	3.272E-17	5.794E-16	3.284E-14	1.870E-12	1.582E-10	7.239E-09	2.696E-07
U-238+D	ΣDSR (j)		8.563E-03	8.597E-03	8.665E-03	8.910E-03	9.686E-03	1.358E-02	3.447E-02	2.734E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Root CSM - AF 100 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		1.239E+03	1.238E+03	1.236E+03	1.231E+03	1.218E+03	1.186E+03	9.988E+02	3.086E+03
Np-237		4.956E+01	4.967E+01	4.987E+01	5.061E+01	5.272E+01	6.001E+01	8.028E+01	7.757E+02
Pu-239		1.273E+03	1.270E+03	1.265E+03	1.246E+03	1.197E+03	1.051E+03	8.406E+02	8.999E+02
Pu-240		1.273E+03	1.270E+03	1.265E+03	1.247E+03	1.200E+03	1.059E+03	8.612E+02	9.730E+02
Tc-99		3.328E+02	3.328E+02	3.327E+02	3.327E+02	3.326E+02	3.329E+02	3.497E+02	6.008E+02
U-234		4.298E+03	4.293E+03	4.282E+03	4.245E+03	4.142E+03	3.816E+03	3.154E+03	2.370E+03
U-235		2.332E+03	2.312E+03	2.273E+03	2.139E+03	1.786E+03	8.793E+02	1.591E+02	1.770E+02
U-238		2.919E+03	2.908E+03	2.885E+03	2.806E+03	2.581E+03	1.841E+03	7.252E+02	9.144E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 249.5 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	250.0 ± 0.5	2.713E-02	9.216E+02	2.711E-02	9.222E+02
Np-237	1.000E+00	0.000E+00	5.044E-01	4.956E+01	3.668E-01	6.816E+01
Pu-239	1.000E+00	249.9 ± 0.5	2.988E-02	8.366E+02	2.988E-02	8.367E+02
Pu-240	1.000E+00	249.9 ± 0.5	2.928E-02	8.537E+02	2.928E-02	8.539E+02
Tc-99	1.000E+00	43.71 ± 0.09	7.517E-02	3.326E+02	7.433E-02	3.363E+02
U-234	1.000E+00	1.000E+03	1.055E-02	2.370E+03	7.899E-03	3.165E+03
U-235	1.000E+00	250.3 ± 0.5	1.583E-01	1.579E+02	1.582E-01	1.580E+02
U-238	1.000E+00	248.2 ± 0.5	3.509E-02	7.126E+02	3.506E-02	7.131E+02

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.018E-02	2.019E-02	2.022E-02	2.030E-02	2.052E-02	2.106E-02	2.499E-02	8.075E-03
Np-237	Am-241	1.000E+00	7.715E-08	2.399E-07	5.649E-07	1.690E-06	4.798E-06	1.473E-05	3.909E-05	2.625E-05
Np-237	Np-237	1.000E+00	5.044E-01	5.034E-01	5.013E-01	4.940E-01	4.742E-01	4.166E-01	3.114E-01	3.219E-02
Np-237	ΣDOSE (j)		5.044E-01	5.034E-01	5.013E-01	4.940E-01	4.742E-01	4.166E-01	3.114E-01	3.222E-02
U-233	Am-241	1.000E+00	1.966E-15	1.160E-14	5.610E-14	4.764E-13	3.934E-12	4.177E-11	3.316E-10	1.276E-09
U-233	Np-237	1.000E+00	1.644E-08	4.273E-08	9.466E-08	2.761E-07	7.915E-07	2.553E-06	6.798E-06	8.717E-06
U-233	ΣDOSE (j)		1.644E-08	4.273E-08	9.466E-08	2.761E-07	7.915E-07	2.553E-06	6.799E-06	8.718E-06
Th-229	Am-241	1.000E+00	3.247E-19	4.398E-18	4.950E-17	1.333E-15	3.632E-14	2.012E-12	1.510E-10	2.516E-09
Th-229	Np-237	1.000E+00	3.801E-12	2.465E-11	1.277E-10	1.171E-09	1.105E-08	1.874E-07	4.833E-06	2.768E-05
Th-229	ΣDOSE (j)		3.801E-12	2.465E-11	1.277E-10	1.171E-09	1.105E-08	1.874E-07	4.834E-06	2.768E-05
Pu-239	Pu-239	1.000E+00	1.964E-02	1.968E-02	1.977E-02	2.006E-02	2.089E-02	2.379E-02	2.974E-02	2.778E-02
U-235	Pu-239	1.000E+00	5.164E-12	1.583E-11	3.766E-11	1.195E-10	4.093E-10	2.684E-09	4.585E-08	1.317E-07
U-235	U-235	1.000E+00	1.072E-02	1.079E-02	1.096E-02	1.155E-02	1.358E-02	2.680E-02	1.495E-01	1.185E-01
U-235	ΣDOSE (j)		1.072E-02	1.079E-02	1.096E-02	1.155E-02	1.358E-02	2.680E-02	1.495E-01	1.185E-01
Pa-231	Pu-239	1.000E+00	1.927E-15	1.398E-14	7.513E-14	6.812E-13	5.853E-12	6.732E-11	6.845E-10	6.768E-09
Pa-231	U-235	1.000E+00	6.008E-06	1.848E-05	4.354E-05	1.319E-04	3.895E-04	1.356E-03	4.579E-03	1.329E-02
Pa-231	ΣDOSE (j)		6.008E-06	1.848E-05	4.354E-05	1.319E-04	3.895E-04	1.356E-03	4.579E-03	1.329E-02
Ac-227	Pu-239	1.000E+00	5.376E-18	6.212E-17	6.098E-16	1.424E-14	3.211E-13	1.111E-11	4.091E-10	4.675E-09
Ac-227	U-235	1.000E+00	1.962E-08	1.073E-07	4.926E-07	3.936E-06	2.960E-05	2.784E-04	3.018E-03	9.478E-03
Ac-227	ΣDOSE (j)		1.962E-08	1.073E-07	4.926E-07	3.936E-06	2.960E-05	2.784E-04	3.018E-03	9.478E-03
Pu-240	Pu-240	4.950E-08	9.721E-10	9.741E-10	9.781E-10	9.920E-10	1.032E-09	1.168E-09	1.437E-09	1.272E-09
Pu-240	Pu-240	1.000E+00	1.964E-02	1.968E-02	1.976E-02	2.004E-02	2.084E-02	2.360E-02	2.903E-02	2.569E-02
Pu-240	ΣDOSE (j)		1.964E-02	1.968E-02	1.976E-02	2.004E-02	2.084E-02	2.360E-02	2.903E-02	2.569E-02
U-236	Pu-240	1.000E+00	7.825E-11	2.419E-10	5.712E-10	1.737E-09	5.185E-09	1.857E-08	6.396E-08	1.785E-07
Th-232	Pu-240	1.000E+00	4.581E-21	2.862E-20	1.439E-19	1.277E-18	1.140E-17	1.509E-16	1.847E-15	1.822E-14
Ra-228	Pu-240	1.000E+00	4.927E-21	7.608E-20	8.657E-19	1.968E-17	3.325E-16	6.304E-15	1.130E-13	1.159E-12
Th-228	Pu-240	1.000E+00	2.329E-22	6.385E-21	1.339E-19	6.300E-18	1.700E-16	4.764E-15	1.187E-13	1.234E-12
Tc-99	Tc-99	1.000E+00	7.513E-02	7.513E-02	7.513E-02	7.514E-02	7.517E-02	7.510E-02	7.149E-02	4.161E-02
U-234	U-234	1.000E+00	5.817E-03	5.824E-03	5.838E-03	5.889E-03	6.032E-03	6.519E-03	7.416E-03	5.865E-03
U-234	U-238	9.999E-01	8.246E-09	2.477E-08	5.793E-08	1.753E-07	5.216E-07	1.857E-06	6.320E-06	1.666E-05
U-234	ΣDOSE (j)		5.817E-03	5.824E-03	5.839E-03	5.889E-03	6.033E-03	6.521E-03	7.422E-03	5.881E-03
Th-230	U-234	1.000E+00	1.584E-08	4.341E-08	9.873E-08	2.986E-07	9.225E-07	3.720E-06	1.575E-05	4.665E-05
Th-230	U-238	9.999E-01	1.620E-14	1.006E-13	5.049E-13	4.481E-12	3.993E-11	5.275E-10	6.603E-09	6.264E-08
Th-230	ΣDOSE (j)		1.584E-08	4.341E-08	9.873E-08	2.986E-07	9.226E-07	3.721E-06	1.576E-05	4.671E-05

Summary : Hematite - Root CSM - AF 100 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	5.528E-10	4.010E-09	2.163E-08	1.996E-07	1.809E-06	2.611E-05	4.684E-04	4.338E-03
Ra-226	U-238	9.999E-01	3.849E-16	6.024E-15	7.212E-14	1.979E-12	5.210E-11	2.475E-09	1.323E-07	4.024E-06
Ra-226	ΣDOSE(j)		5.528E-10	4.010E-09	2.163E-08	1.996E-07	1.809E-06	2.611E-05	4.686E-04	4.342E-03
Pb-210	U-234	1.000E+00	2.475E-12	2.457E-11	2.072E-10	4.145E-09	8.148E-08	1.977E-06	2.795E-05	2.993E-04
Pb-210	U-238	9.999E-01	1.597E-18	3.272E-17	5.794E-16	3.284E-14	1.870E-12	1.582E-10	7.239E-09	2.696E-07
Pb-210	ΣDOSE(j)		2.475E-12	2.457E-11	2.072E-10	4.145E-09	8.148E-08	1.977E-06	2.796E-05	2.996E-04
U-238	U-238	5.400E-05	2.830E-07	2.833E-07	2.841E-07	2.865E-07	2.935E-07	3.170E-07	3.583E-07	2.839E-07
U-238	U-238	9.999E-01	8.563E-03	8.597E-03	8.665E-03	8.910E-03	9.685E-03	1.358E-02	3.447E-02	2.732E-02
U-238	ΣDOSE(j)		8.563E-03	8.597E-03	8.665E-03	8.911E-03	9.685E-03	1.358E-02	3.447E-02	2.732E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Root CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 100 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.12 seconds

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Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 1,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Root CSM - AF 1,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH (9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH (10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (16)

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1000.00 square meters	Am-241	1.000E+00
Thickness:	1.35 meters	Np-237	1.000E+00
Cover Depth:	0.15 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.457E+00	6.447E+00	6.426E+00	6.353E+00	6.154E+00	5.537E+00	4.256E+00	1.705E+00
M(t):	2.583E-01	2.579E-01	2.570E-01	2.541E-01	2.462E-01	2.215E-01	1.702E-01	6.819E-02

Maximum TDOSE(t): 6.457E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.351E-06	0.0000	5.147E-06	0.0000	0.000E+00	0.0000	2.016E-01	0.0312	6.391E-06	0.0000	7.116E-07	0.0000	1.032E-04	0.0000
Np-237	1.216E-02	0.0019	6.253E-06	0.0000	0.000E+00	0.0000	4.919E+00	0.7619	2.898E-03	0.0004	7.804E-05	0.0000	1.259E-04	0.0000
Pu-239	1.956E-06	0.0000	4.978E-06	0.0000	0.000E+00	0.0000	1.962E-01	0.0304	1.244E-05	0.0000	3.429E-07	0.0000	1.005E-04	0.0000
Pu-240	4.434E-08	0.0000	4.978E-06	0.0000	0.000E+00	0.0000	1.962E-01	0.0304	1.244E-05	0.0000	3.428E-07	0.0000	1.005E-04	0.0000
Tc-99	1.195E-07	0.0000	9.650E-11	0.0000	0.000E+00	0.0000	7.500E-01	0.1162	4.355E-05	0.0000	1.183E-03	0.0002	4.143E-08	0.0000
U-234	5.408E-07	0.0000	1.531E-06	0.0000	0.000E+00	0.0000	5.804E-02	0.0090	4.521E-05	0.0000	5.668E-05	0.0000	8.033E-06	0.0000
U-235	5.221E-03	0.0008	1.427E-06	0.0000	0.000E+00	0.0000	5.489E-02	0.0085	4.272E-05	0.0000	5.354E-05	0.0000	7.593E-06	0.0000
U-238	3.041E-03	0.0005	1.369E-06	0.0000	0.000E+00	0.0000	5.511E-02	0.0085	4.293E-05	0.0000	5.381E-05	0.0000	7.627E-06	0.0000
Total	2.042E-02	0.0032	2.568E-05	0.0000	0.000E+00	0.0000	6.432E+00	0.9961	3.103E-03	0.0005	1.426E-03	0.0002	4.534E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.017E-01	0.0312
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.935E+00	0.7642
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E-01	0.0304
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E-01	0.0304
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-01	0.1163
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.815E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.022E-02	0.0093
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.825E-02	0.0090
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.457E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.457E-06	0.0000	1.542E-05	0.0000	0.000E+00	0.0000	2.015E-01	0.0313	7.443E-06	0.0000	8.633E-07	0.0000	3.093E-04	0.0000
Np-237	1.226E-02	0.0019	1.870E-05	0.0000	0.000E+00	0.0000	4.907E+00	0.7612	2.916E-03	0.0005	7.878E-05	0.0000	3.766E-04	0.0001
Pu-239	1.982E-06	0.0000	1.493E-05	0.0000	0.000E+00	0.0000	1.964E-01	0.0305	1.451E-05	0.0000	4.165E-07	0.0000	3.015E-04	0.0000
Pu-240	4.532E-08	0.0000	1.493E-05	0.0000	0.000E+00	0.0000	1.964E-01	0.0305	1.451E-05	0.0000	4.165E-07	0.0000	3.014E-04	0.0000
Tc-99	1.220E-07	0.0000	2.893E-10	0.0000	0.000E+00	0.0000	7.500E-01	0.1163	4.355E-05	0.0000	1.183E-03	0.0002	1.242E-07	0.0000
U-234	5.528E-07	0.0000	4.593E-06	0.0000	0.000E+00	0.0000	5.807E-02	0.0090	4.738E-05	0.0000	6.026E-05	0.0000	2.409E-05	0.0000
U-235	5.293E-03	0.0008	4.281E-06	0.0000	0.000E+00	0.0000	5.504E-02	0.0085	4.476E-05	0.0000	5.693E-05	0.0000	2.279E-05	0.0000
U-238	3.068E-03	0.0005	4.107E-06	0.0000	0.000E+00	0.0000	5.513E-02	0.0086	4.498E-05	0.0000	5.721E-05	0.0000	2.288E-05	0.0000
Total	2.063E-02	0.0032	7.697E-05	0.0000	0.000E+00	0.0000	6.420E+00	0.9959	3.134E-03	0.0005	1.438E-03	0.0002	1.359E-03	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.018E-01	0.0313
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.923E+00	0.7637
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.967E-01	0.0305
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.967E-01	0.0305
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-01	0.1165
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.820E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.046E-02	0.0094
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.833E-02	0.0090
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.447E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.680E-06	0.0000	3.586E-05	0.0000	0.000E+00	0.0000	2.011E-01	0.0313	9.548E-06	0.0000	1.165E-06	0.0000	7.193E-04	0.0001
Np-237	1.248E-02	0.0019	4.337E-05	0.0000	0.000E+00	0.0000	4.883E+00	0.7600	2.954E-03	0.0005	8.024E-05	0.0000	8.731E-04	0.0001
Pu-239	2.037E-06	0.0000	3.484E-05	0.0000	0.000E+00	0.0000	1.967E-01	0.0306	1.866E-05	0.0000	5.639E-07	0.0000	7.033E-04	0.0001
Pu-240	4.735E-08	0.0000	3.483E-05	0.0000	0.000E+00	0.0000	1.966E-01	0.0306	1.866E-05	0.0000	5.637E-07	0.0000	7.031E-04	0.0001
Tc-99	1.272E-07	0.0000	6.740E-10	0.0000	0.000E+00	0.0000	7.501E-01	0.1167	4.355E-05	0.0000	1.183E-03	0.0002	2.894E-07	0.0000
U-234	5.817E-07	0.0000	1.071E-05	0.0000	0.000E+00	0.0000	5.812E-02	0.0090	5.171E-05	0.0000	6.742E-05	0.0000	5.618E-05	0.0000
U-235	5.441E-03	0.0008	9.989E-06	0.0000	0.000E+00	0.0000	5.534E-02	0.0086	4.886E-05	0.0000	6.369E-05	0.0000	5.324E-05	0.0000
U-238	3.123E-03	0.0005	9.577E-06	0.0000	0.000E+00	0.0000	5.519E-02	0.0086	4.910E-05	0.0000	6.401E-05	0.0000	5.334E-05	0.0000
Total	2.105E-02	0.0033	1.792E-04	0.0000	0.000E+00	0.0000	6.397E+00	0.9955	3.194E-03	0.0005	1.460E-03	0.0002	3.162E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.019E-01	0.0314
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.900E+00	0.7626
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.974E-01	0.0307
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.974E-01	0.0307
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.513E-01	0.1169
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.831E-02	0.0091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.096E-02	0.0095
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.849E-02	0.0091
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.426E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.572E-06	0.0000	1.064E-04	0.0000	0.000E+00	0.0000	2.000E-01	0.0315	1.681E-05	0.0000	2.206E-06	0.0000	2.134E-03	0.0003
Np-237	1.328E-02	0.0021	1.272E-04	0.0000	0.000E+00	0.0000	4.801E+00	0.7556	3.079E-03	0.0005	8.517E-05	0.0000	2.561E-03	0.0004
Pu-239	2.240E-06	0.0000	1.044E-04	0.0000	0.000E+00	0.0000	1.976E-01	0.0311	3.320E-05	0.0000	1.079E-06	0.0000	2.109E-03	0.0003
Pu-240	5.521E-08	0.0000	1.043E-04	0.0000	0.000E+00	0.0000	1.975E-01	0.0311	3.317E-05	0.0000	1.078E-06	0.0000	2.107E-03	0.0003
Tc-99	1.469E-07	0.0000	2.011E-09	0.0000	0.000E+00	0.0000	7.502E-01	0.1181	4.357E-05	0.0000	1.183E-03	0.0002	8.635E-07	0.0000
U-234	7.390E-07	0.0000	3.206E-05	0.0000	0.000E+00	0.0000	5.831E-02	0.0092	6.685E-05	0.0000	9.241E-05	0.0000	1.682E-04	0.0000
U-235	5.991E-03	0.0009	2.999E-05	0.0000	0.000E+00	0.0000	5.643E-02	0.0089	6.317E-05	0.0000	8.731E-05	0.0000	1.605E-04	0.0000
U-238	3.325E-03	0.0005	2.866E-05	0.0000	0.000E+00	0.0000	5.537E-02	0.0087	6.348E-05	0.0000	8.774E-05	0.0000	1.597E-04	0.0000
Total	2.260E-02	0.0036	5.331E-04	0.0001	0.000E+00	0.0000	6.316E+00	0.9941	3.399E-03	0.0005	1.540E-03	0.0002	9.399E-03	0.0015

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.023E-01	0.0318
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.820E+00	0.7586
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.999E-01	0.0315
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.997E-01	0.0314
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.514E-01	0.1183
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.867E-02	0.0092
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.276E-02	0.0099
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.903E-02	0.0093
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.353E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.428E-06	0.0000	2.992E-04	0.0000	0.000E+00	0.0000	1.968E-01	0.0320	3.666E-05	0.0000	5.053E-06	0.0000	6.001E-03	0.0010
Np-237	1.584E-02	0.0026	3.463E-04	0.0001	0.000E+00	0.0000	4.571E+00	0.7427	3.399E-03	0.0006	9.785E-05	0.0000	6.971E-03	0.0011
Pu-239	2.941E-06	0.0000	3.028E-04	0.0000	0.000E+00	0.0000	2.004E-01	0.0326	7.461E-05	0.0000	2.547E-06	0.0000	6.113E-03	0.0010
Pu-240	8.561E-08	0.0000	3.021E-04	0.0000	0.000E+00	0.0000	1.999E-01	0.0325	7.444E-05	0.0000	2.542E-06	0.0000	6.098E-03	0.0010
Tc-99	2.219E-07	0.0000	5.752E-09	0.0000	0.000E+00	0.0000	7.504E-01	0.1219	4.359E-05	0.0000	1.184E-03	0.0002	2.470E-06	0.0000
U-234	1.780E-06	0.0000	9.255E-05	0.0000	0.000E+00	0.0000	5.886E-02	0.0096	1.097E-04	0.0000	1.632E-04	0.0000	4.854E-04	0.0001
U-235	7.893E-03	0.0013	8.787E-05	0.0000	0.000E+00	0.0000	5.965E-02	0.0097	1.037E-04	0.0000	1.542E-04	0.0000	4.761E-04	0.0001
U-238	3.975E-03	0.0006	8.272E-05	0.0000	0.000E+00	0.0000	5.588E-02	0.0091	1.042E-04	0.0000	1.549E-04	0.0000	4.607E-04	0.0001
Total	2.772E-02	0.0045	1.513E-03	0.0002	0.000E+00	0.0000	6.092E+00	0.9900	3.945E-03	0.0006	1.764E-03	0.0003	2.661E-02	0.0043

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.031E-01	0.0330
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.597E+00	0.7470
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.069E-01	0.0336
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.064E-01	0.0335
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.517E-01	0.1221
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.971E-02	0.0097
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.836E-02	0.0111
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.065E-02	0.0099
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.154E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.915E-05	0.0000	8.806E-04	0.0002	0.000E+00	0.0000	1.854E-01	0.0335	9.652E-05	0.0000	1.363E-05	0.0000	1.766E-02	0.0032
Np-237	2.946E-02	0.0053	9.095E-04	0.0002	0.000E+00	0.0000	3.842E+00	0.6939	4.140E-03	0.0007	1.284E-04	0.0000	1.831E-02	0.0033
Pu-239	7.616E-06	0.0000	9.909E-04	0.0002	0.000E+00	0.0000	2.099E-01	0.0379	2.183E-04	0.0000	7.642E-06	0.0000	2.001E-02	0.0036
Pu-240	3.974E-07	0.0000	9.832E-04	0.0002	0.000E+00	0.0000	2.083E-01	0.0376	2.166E-04	0.0000	7.584E-06	0.0000	1.985E-02	0.0036
Tc-99	9.401E-07	0.0000	1.796E-08	0.0000	0.000E+00	0.0000	7.498E-01	0.1354	4.361E-05	0.0000	1.185E-03	0.0002	7.709E-06	0.0000
U-234	1.877E-05	0.0000	2.984E-04	0.0001	0.000E+00	0.0000	6.078E-02	0.0110	2.554E-04	0.0000	4.036E-04	0.0001	1.565E-03	0.0003
U-235	2.078E-02	0.0038	3.066E-04	0.0001	0.000E+00	0.0000	7.182E-02	0.0130	2.416E-04	0.0000	3.816E-04	0.0001	1.725E-03	0.0003
U-238	7.487E-03	0.0014	2.664E-04	0.0000	0.000E+00	0.0000	5.759E-02	0.0104	2.425E-04	0.0000	3.832E-04	0.0001	1.484E-03	0.0003
Total	5.783E-02	0.0104	4.636E-03	0.0008	0.000E+00	0.0000	5.385E+00	0.9727	5.454E-03	0.0010	2.511E-03	0.0005	8.061E-02	0.0146

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-01	0.0369
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.895E+00	0.7035
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.311E-01	0.0417
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.293E-01	0.0414
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.510E-01	0.1356
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.332E-02	0.0114
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.525E-02	0.0172
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.745E-02	0.0122
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.537E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.254E-03	0.0015	1.586E-03	0.0004	0.000E+00	0.0000	1.493E-01	0.0351	1.688E-04	0.0000	2.399E-05	0.0000	3.182E-02	0.0075
Np-237	9.447E-02	0.0222	1.184E-03	0.0003	0.000E+00	0.0000	2.232E+00	0.5243	3.764E-03	0.0009	1.239E-04	0.0000	2.382E-02	0.0056
Pu-239	6.612E-05	0.0000	2.418E-03	0.0006	0.000E+00	0.0000	2.287E-01	0.0537	5.163E-04	0.0001	1.820E-05	0.0000	4.881E-02	0.0115
Pu-240	3.376E-05	0.0000	2.362E-03	0.0006	0.000E+00	0.0000	2.234E-01	0.0525	5.044E-04	0.0001	1.779E-05	0.0000	4.769E-02	0.0112
Tc-99	2.307E-05	0.0000	3.827E-08	0.0000	0.000E+00	0.0000	7.135E-01	0.1676	4.160E-05	0.0000	1.131E-03	0.0003	1.643E-05	0.0000
U-234	4.971E-04	0.0001	6.974E-04	0.0002	0.000E+00	0.0000	6.438E-02	0.0151	5.370E-04	0.0001	8.690E-04	0.0002	3.670E-03	0.0009
U-235	1.609E-01	0.0378	9.002E-04	0.0002	0.000E+00	0.0000	1.071E-01	0.0252	5.084E-04	0.0001	8.202E-04	0.0002	5.466E-03	0.0013
U-238	3.108E-02	0.0073	6.204E-04	0.0001	0.000E+00	0.0000	5.989E-02	0.0141	5.085E-04	0.0001	8.223E-04	0.0002	3.455E-03	0.0008
Total	2.933E-01	0.0689	9.768E-03	0.0023	0.000E+00	0.0000	3.778E+00	0.8876	6.549E-03	0.0015	3.827E-03	0.0009	1.648E-01	0.0387

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.892E-01	0.0445
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.355E+00	0.5533
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.805E-01	0.0659
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.740E-01	0.0644
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.147E-01	0.1679
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.065E-02	0.0166
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.757E-01	0.0648
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.638E-02	0.0226
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.256E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.026E-03	0.0012	5.128E-04	0.0003	0.000E+00	0.0000	4.835E-02	0.0284	5.471E-05	0.0000	7.758E-06	0.0000	1.029E-02	0.0060
Np-237	9.795E-03	0.0057	1.241E-04	0.0001	0.000E+00	0.0000	2.308E-01	0.1354	3.898E-04	0.0002	1.373E-05	0.0000	2.471E-03	0.0014
Pu-239	6.189E-05	0.0000	2.259E-03	0.0013	0.000E+00	0.0000	2.136E-01	0.1253	4.824E-04	0.0003	1.701E-05	0.0000	4.561E-02	0.0268
Pu-240	2.989E-05	0.0000	2.091E-03	0.0012	0.000E+00	0.0000	1.977E-01	0.1160	4.466E-04	0.0003	1.576E-05	0.0000	4.222E-02	0.0248
Tc-99	1.343E-05	0.0000	2.228E-08	0.0000	0.000E+00	0.0000	4.153E-01	0.2436	2.421E-05	0.0000	6.584E-04	0.0004	9.566E-06	0.0000
U-234	3.880E-03	0.0023	5.625E-04	0.0003	0.000E+00	0.0000	6.266E-02	0.0368	4.457E-04	0.0003	7.275E-04	0.0004	3.108E-03	0.0018
U-235	1.338E-01	0.0785	1.300E-03	0.0008	0.000E+00	0.0000	1.865E-01	0.1094	4.099E-04	0.0002	6.563E-04	0.0004	8.889E-03	0.0052
U-238	2.464E-02	0.0145	4.929E-04	0.0003	0.000E+00	0.0000	4.757E-02	0.0279	4.039E-04	0.0002	6.532E-04	0.0004	2.745E-03	0.0016
Total	1.743E-01	0.1022	7.343E-03	0.0043	0.000E+00	0.0000	1.402E+00	0.8226	2.657E-03	0.0016	2.750E-03	0.0016	1.153E-01	0.0677

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.124E-02	0.0359
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.436E-01	0.1429
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.620E-01	0.1537
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.425E-01	0.1423
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.160E-01	0.2440
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.139E-02	0.0419
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.316E-01	0.1945
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.650E-02	0.0449
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.705E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 1,000 m^2

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.017E-01	2.018E-01	2.019E-01	2.023E-01	2.031E-01	2.040E-01	1.889E-01	6.104E-02
Am-241	Np-237+D	1.000E+00	7.537E-07	2.345E-06	5.521E-06	1.648E-05	4.651E-05	1.377E-04	2.956E-04	1.985E-04
Am-241	U-233	1.000E+00	1.964E-14	1.158E-13	5.595E-13	4.740E-12	3.886E-11	4.028E-10	3.011E-09	1.159E-08
Am-241	Th-229+D	1.000E+00	1.940E-18	2.420E-17	2.599E-16	6.656E-15	1.657E-13	6.744E-12	2.885E-10	4.804E-09
Am-241	ΣDSR (j)		2.017E-01	2.018E-01	2.019E-01	2.023E-01	2.031E-01	2.042E-01	1.892E-01	6.124E-02
Np-237+D	Np-237+D	1.000E+00	4.935E+00	4.923E+00	4.900E+00	4.820E+00	4.597E+00	3.895E+00	2.355E+00	2.434E-01
Np-237+D	U-233	1.000E+00	1.642E-07	4.266E-07	9.442E-07	2.747E-06	7.817E-06	2.461E-05	6.173E-05	7.915E-05
Np-237+D	Th-229+D	1.000E+00	2.187E-11	1.326E-10	6.633E-10	5.824E-09	5.034E-08	6.279E-07	9.232E-06	5.285E-05
Np-237+D	ΣDSR (j)		4.935E+00	4.923E+00	4.900E+00	4.820E+00	4.597E+00	3.895E+00	2.355E+00	2.436E-01
Pu-239	Pu-239	1.000E+00	1.964E-01	1.967E-01	1.974E-01	1.999E-01	2.069E-01	2.311E-01	2.805E-01	2.620E-01
Pu-239	U-235+D	1.000E+00	2.844E-11	8.777E-11	2.074E-10	6.346E-10	1.936E-09	8.041E-09	6.840E-08	1.964E-07
Pu-239	Pa-231	1.000E+00	1.920E-14	1.393E-13	7.483E-13	6.782E-12	5.818E-11	6.640E-10	6.492E-09	6.419E-08
Pu-239	Ac-227+D	1.000E+00	4.749E-17	5.264E-16	4.976E-15	1.110E-13	2.333E-12	6.300E-11	1.242E-09	1.418E-08
Pu-239	ΣDSR (j)		1.964E-01	1.967E-01	1.974E-01	1.999E-01	2.069E-01	2.311E-01	2.805E-01	2.620E-01
Pu-240	Pu-240	4.950E-08	9.719E-09	9.736E-09	9.769E-09	9.885E-09	1.022E-08	1.135E-08	1.356E-08	1.200E-08
Pu-240	Pu-240	1.000E+00	1.964E-01	1.967E-01	1.974E-01	1.997E-01	2.064E-01	2.293E-01	2.740E-01	2.425E-01
Pu-240	U-236	1.000E+00	7.823E-10	2.418E-09	5.705E-09	1.731E-08	5.131E-08	1.800E-07	5.957E-07	1.663E-06
Pu-240	Th-232	1.000E+00	4.577E-20	2.855E-19	1.430E-18	1.256E-17	1.086E-16	1.321E-15	1.437E-14	1.417E-13
Pu-240	Ra-228+D	1.000E+00	3.842E-20	6.010E-19	6.865E-18	1.550E-16	2.538E-15	4.174E-14	5.026E-13	5.155E-12
Pu-240	Th-228+D	1.000E+00	4.657E-22	1.034E-20	1.849E-19	7.750E-18	1.990E-16	5.345E-15	1.413E-13	1.468E-12
Pu-240	ΣDSR (j)		1.964E-01	1.967E-01	1.974E-01	1.997E-01	2.064E-01	2.293E-01	2.740E-01	2.425E-01
Tc-99	Tc-99	1.000E+00	7.513E-01	7.513E-01	7.513E-01	7.514E-01	7.517E-01	7.510E-01	7.147E-01	4.160E-01
U-234	U-234	1.000E+00	5.815E-02	5.820E-02	5.831E-02	5.867E-02	5.969E-02	6.314E-02	6.878E-02	5.439E-02
U-234	Th-230	1.000E+00	1.582E-07	4.327E-07	9.810E-07	2.933E-06	8.789E-06	3.250E-05	1.188E-04	3.519E-04
U-234	Ra-226+D	1.000E+00	3.433E-09	2.534E-08	1.372E-07	1.250E-06	1.081E-05	1.277E-04	1.476E-03	1.367E-02
U-234	Pb-210+D	1.000E+00	2.475E-11	2.457E-10	2.072E-09	4.145E-08	8.145E-07	1.976E-05	2.779E-04	2.976E-03
U-234	ΣDSR (j)		5.815E-02	5.820E-02	5.831E-02	5.867E-02	5.971E-02	6.332E-02	7.065E-02	7.139E-02
U-235+D	U-235+D	1.000E+00	6.016E-02	6.028E-02	6.052E-02	6.141E-02	6.427E-02	8.030E-02	2.231E-01	1.768E-01
U-235+D	Pa-231	1.000E+00	5.985E-05	1.841E-04	4.337E-04	1.313E-03	3.872E-03	1.337E-02	4.343E-02	1.261E-01
U-235+D	Ac-227+D	1.000E+00	1.708E-07	8.940E-07	3.972E-06	3.052E-05	2.145E-04	1.577E-03	9.158E-03	2.875E-02
U-235+D	ΣDSR (j)		6.022E-02	6.046E-02	6.096E-02	6.276E-02	6.836E-02	9.525E-02	2.757E-01	3.316E-01
U-238	U-238	5.400E-05	2.829E-06	2.832E-06	2.837E-06	2.855E-06	2.904E-06	3.073E-06	3.346E-06	2.652E-06
U-238+D	U-238+D	9.999E-01	5.825E-02	5.833E-02	5.848E-02	5.903E-02	6.065E-02	6.743E-02	9.632E-02	7.633E-02
U-238+D	U-234	9.999E-01	8.244E-08	2.475E-07	5.785E-07	1.746E-06	5.161E-06	1.799E-05	5.861E-05	1.545E-04
U-238+D	Th-230	9.999E-01	1.617E-13	1.003E-12	5.017E-12	4.402E-11	3.804E-10	4.609E-09	4.981E-08	4.725E-07
U-238+D	Ra-226+D	9.999E-01	2.364E-15	3.782E-14	4.560E-13	1.239E-11	3.110E-10	1.210E-08	4.168E-07	1.268E-05
U-238+D	Pb-210+D	9.999E-01	1.596E-17	3.272E-16	5.794E-15	3.283E-13	1.870E-11	1.581E-09	7.198E-08	2.680E-06
U-238+D	ΣDSR (j)		5.825E-02	5.833E-02	5.848E-02	5.903E-02	6.065E-02	6.745E-02	9.638E-02	7.650E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		1.239E+02	1.239E+02	1.238E+02	1.236E+02	1.231E+02	1.224E+02	1.321E+02	4.082E+02
Np-237		5.066E+00	5.078E+00	5.102E+00	5.187E+00	5.438E+00	6.419E+00	1.062E+01	1.026E+02
Pu-239		1.273E+02	1.271E+02	1.266E+02	1.251E+02	1.209E+02	1.082E+02	8.913E+01	9.541E+01
Pu-240		1.273E+02	1.271E+02	1.267E+02	1.252E+02	1.211E+02	1.090E+02	9.123E+01	1.031E+02
Tc-99		3.328E+01	3.328E+01	3.328E+01	3.327E+01	3.326E+01	3.329E+01	3.498E+01	6.010E+01
U-234		4.299E+02	4.295E+02	4.288E+02	4.261E+02	4.187E+02	3.948E+02	3.539E+02	3.502E+02
U-235		4.152E+02	4.135E+02	4.101E+02	3.984E+02	3.657E+02	2.625E+02	9.069E+01	7.539E+01
U-238		4.291E+02	4.286E+02	4.275E+02	4.235E+02	4.122E+02	3.706E+02	2.594E+02	3.268E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	249.4 ± 0.5	2.052E-01	1.219E+02	2.017E-01	1.239E+02
Np-237	1.000E+00	0.000E+00	4.935E+00	5.066E+00	4.935E+00	5.066E+00
Pu-239	1.000E+00	249.9 ± 0.5	2.819E-01	8.870E+01	1.964E-01	1.273E+02
Pu-240	1.000E+00	249.9 ± 0.5	2.764E-01	9.044E+01	1.964E-01	1.273E+02
Tc-99	1.000E+00	43.44 ± 0.09	7.517E-01	3.326E+01	7.513E-01	3.328E+01
U-234	1.000E+00	1.000E+03	7.139E-02	3.502E+02	5.815E-02	4.299E+02
U-235	1.000E+00	1.000E+03	3.316E-01	7.539E+01	6.022E-02	4.152E+02
U-238	1.000E+00	249.9 ± 0.5	9.799E-02	2.551E+02	5.825E-02	4.291E+02

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.017E-01	2.018E-01	2.019E-01	2.023E-01	2.031E-01	2.040E-01	1.889E-01	6.104E-02
Np-237	Am-241	1.000E+00	7.537E-07	2.345E-06	5.521E-06	1.648E-05	4.651E-05	1.377E-04	2.956E-04	1.985E-04
Np-237	Np-237	1.000E+00	4.935E+00	4.923E+00	4.900E+00	4.820E+00	4.597E+00	3.895E+00	2.355E+00	2.434E-01
Np-237	ΣDOSE (j)		4.935E+00	4.923E+00	4.900E+00	4.820E+00	4.597E+00	3.895E+00	2.355E+00	2.436E-01
U-233	Am-241	1.000E+00	1.964E-14	1.158E-13	5.595E-13	4.740E-12	3.886E-11	4.028E-10	3.011E-09	1.159E-08
U-233	Np-237	1.000E+00	1.642E-07	4.266E-07	9.442E-07	2.747E-06	7.817E-06	2.461E-05	6.173E-05	7.915E-05
U-233	ΣDOSE (j)		1.642E-07	4.266E-07	9.442E-07	2.747E-06	7.817E-06	2.461E-05	6.174E-05	7.916E-05
Th-229	Am-241	1.000E+00	1.940E-18	2.420E-17	2.599E-16	6.656E-15	1.657E-13	6.744E-12	2.885E-10	4.804E-09
Th-229	Np-237	1.000E+00	2.187E-11	1.326E-10	6.633E-10	5.824E-09	5.034E-08	6.279E-07	9.232E-06	5.285E-05
Th-229	ΣDOSE (j)		2.187E-11	1.326E-10	6.633E-10	5.824E-09	5.034E-08	6.279E-07	9.232E-06	5.286E-05
Pu-239	Pu-239	1.000E+00	1.964E-01	1.967E-01	1.974E-01	1.999E-01	2.069E-01	2.311E-01	2.805E-01	2.620E-01
U-235	Pu-239	1.000E+00	2.844E-11	8.777E-11	2.074E-10	6.346E-10	1.936E-09	8.041E-09	6.840E-08	1.964E-07
U-235	U-235	1.000E+00	6.016E-02	6.028E-02	6.052E-02	6.141E-02	6.427E-02	8.030E-02	2.231E-01	1.768E-01
U-235	ΣDOSE (j)		6.016E-02	6.028E-02	6.052E-02	6.141E-02	6.427E-02	8.030E-02	2.231E-01	1.768E-01
Pa-231	Pu-239	1.000E+00	1.920E-14	1.393E-13	7.483E-13	6.782E-12	5.818E-11	6.640E-10	6.492E-09	6.419E-08
Pa-231	U-235	1.000E+00	5.985E-05	1.841E-04	4.337E-04	1.313E-03	3.872E-03	1.337E-02	4.343E-02	1.261E-01
Pa-231	ΣDOSE (j)		5.985E-05	1.841E-04	4.337E-04	1.313E-03	3.872E-03	1.337E-02	4.343E-02	1.261E-01
Ac-227	Pu-239	1.000E+00	4.749E-17	5.264E-16	4.976E-15	1.110E-13	2.333E-12	6.300E-11	1.242E-09	1.418E-08
Ac-227	U-235	1.000E+00	1.708E-07	8.940E-07	3.972E-06	3.052E-05	2.145E-04	1.577E-03	9.158E-03	2.875E-02
Ac-227	ΣDOSE (j)		1.708E-07	8.940E-07	3.972E-06	3.052E-05	2.145E-04	1.577E-03	9.158E-03	2.875E-02
Pu-240	Pu-240	4.950E-08	9.719E-09	9.736E-09	9.769E-09	9.885E-09	1.022E-08	1.135E-08	1.356E-08	1.200E-08
Pu-240	Pu-240	1.000E+00	1.964E-01	1.967E-01	1.974E-01	1.997E-01	2.064E-01	2.293E-01	2.740E-01	2.425E-01
Pu-240	ΣDOSE (j)		1.964E-01	1.967E-01	1.974E-01	1.997E-01	2.064E-01	2.293E-01	2.740E-01	2.425E-01
U-236	Pu-240	1.000E+00	7.823E-10	2.418E-09	5.705E-09	1.731E-08	5.131E-08	1.800E-07	5.957E-07	1.663E-06
Th-232	Pu-240	1.000E+00	4.577E-20	2.855E-19	1.430E-18	1.256E-17	1.086E-16	1.321E-15	1.437E-14	1.417E-13
Ra-228	Pu-240	1.000E+00	3.842E-20	6.010E-19	6.865E-18	1.550E-16	2.538E-15	4.174E-14	5.026E-13	5.155E-12
Th-228	Pu-240	1.000E+00	4.657E-22	1.034E-20	1.849E-19	7.750E-18	1.990E-16	5.345E-15	1.413E-13	1.468E-12
Tc-99	Tc-99	1.000E+00	7.513E-01	7.513E-01	7.513E-01	7.514E-01	7.517E-01	7.510E-01	7.147E-01	4.160E-01
U-234	U-234	1.000E+00	5.815E-02	5.820E-02	5.831E-02	5.867E-02	5.969E-02	6.314E-02	6.878E-02	5.439E-02
U-234	U-238	9.999E-01	8.244E-08	2.475E-07	5.785E-07	1.746E-06	5.161E-06	1.799E-05	5.861E-05	1.545E-04
U-234	ΣDOSE (j)		5.815E-02	5.820E-02	5.831E-02	5.867E-02	5.969E-02	6.316E-02	6.884E-02	5.455E-02
Th-230	U-234	1.000E+00	1.582E-07	4.327E-07	9.810E-07	2.933E-06	8.789E-06	3.250E-05	1.188E-04	3.519E-04
Th-230	U-238	9.999E-01	1.617E-13	1.003E-12	5.017E-12	4.402E-11	3.804E-10	4.609E-09	4.981E-08	4.725E-07
Th-230	ΣDOSE (j)		1.582E-07	4.327E-07	9.810E-07	2.933E-06	8.789E-06	3.251E-05	1.189E-04	3.523E-04

Summary : Hematite - Root CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	3.433E-09	2.534E-08	1.372E-07	1.250E-06	1.081E-05	1.277E-04	1.476E-03	1.367E-02
Ra-226	U-238	9.999E-01	2.364E-15	3.782E-14	4.560E-13	1.239E-11	3.110E-10	1.210E-08	4.168E-07	1.268E-05
Ra-226	ΣDOSE(j)		3.433E-09	2.534E-08	1.372E-07	1.250E-06	1.081E-05	1.277E-04	1.476E-03	1.368E-02
Pb-210	U-234	1.000E+00	2.475E-11	2.457E-10	2.072E-09	4.145E-08	8.145E-07	1.976E-05	2.779E-04	2.976E-03
Pb-210	U-238	9.999E-01	1.596E-17	3.272E-16	5.794E-15	3.283E-13	1.870E-11	1.581E-09	7.198E-08	2.680E-06
Pb-210	ΣDOSE(j)		2.475E-11	2.457E-10	2.072E-09	4.145E-08	8.146E-07	1.976E-05	2.780E-04	2.979E-03
U-238	U-238	5.400E-05	2.829E-06	2.832E-06	2.837E-06	2.855E-06	2.904E-06	3.073E-06	3.346E-06	2.652E-06
U-238	U-238	9.999E-01	5.825E-02	5.833E-02	5.848E-02	5.903E-02	6.065E-02	6.743E-02	9.632E-02	7.633E-02
U-238	ΣDOSE(j)		5.825E-02	5.833E-02	5.848E-02	5.903E-02	6.065E-02	6.743E-02	9.632E-02	7.633E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.11 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Root CSM - AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Root CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Root CSM - AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Root CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Root CSM - AF 10,000 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Root CSM - AF 10,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH (9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH (10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (16)

Summary : Hematite - Root CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Root CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Root CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10000.00 square meters	Am-241	1.000E+00
Thickness:	1.35 meters	Np-237	1.000E+00
Cover Depth:	0.15 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.498E+00	6.488E+00	6.468E+00	6.398E+00	6.206E+00	5.610E+00	4.365E+00	1.763E+00
M(t):	2.599E-01	2.595E-01	2.587E-01	2.559E-01	2.482E-01	2.244E-01	1.746E-01	7.052E-02

Maximum TDOSE(t): 6.498E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Root CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.351E-06	0.0000	6.591E-06	0.0000	0.000E+00	0.0000	2.016E-01	0.0310	6.391E-05	0.0000	7.116E-06	0.0000	1.032E-04	0.0000
Np-237	1.216E-02	0.0019	8.008E-06	0.0000	0.000E+00	0.0000	4.919E+00	0.7571	2.898E-02	0.0045	7.804E-04	0.0001	1.259E-04	0.0000
Pu-239	1.956E-06	0.0000	6.375E-06	0.0000	0.000E+00	0.0000	1.962E-01	0.0302	1.244E-04	0.0000	3.429E-06	0.0000	1.005E-04	0.0000
Pu-240	4.434E-08	0.0000	6.375E-06	0.0000	0.000E+00	0.0000	1.962E-01	0.0302	1.244E-04	0.0000	3.428E-06	0.0000	1.005E-04	0.0000
Tc-99	1.195E-07	0.0000	1.236E-10	0.0000	0.000E+00	0.0000	7.500E-01	0.1154	4.355E-04	0.0001	1.183E-02	0.0018	4.143E-08	0.0000
U-234	5.408E-07	0.0000	1.961E-06	0.0000	0.000E+00	0.0000	5.804E-02	0.0089	4.521E-04	0.0001	5.668E-04	0.0001	8.033E-06	0.0000
U-235	5.221E-03	0.0008	1.828E-06	0.0000	0.000E+00	0.0000	5.489E-02	0.0084	4.272E-04	0.0001	5.354E-04	0.0001	7.593E-06	0.0000
U-238	3.041E-03	0.0005	1.754E-06	0.0000	0.000E+00	0.0000	5.511E-02	0.0085	4.293E-04	0.0001	5.381E-04	0.0001	7.627E-06	0.0000
Total	2.042E-02	0.0031	3.289E-05	0.0000	0.000E+00	0.0000	6.432E+00	0.9898	3.103E-02	0.0048	1.426E-02	0.0022	4.534E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.018E-01	0.0311
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.961E+00	0.7636
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.965E-01	0.0302
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.965E-01	0.0302
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.623E-01	0.1173
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.907E-02	0.0091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.108E-02	0.0094
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.913E-02	0.0091
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.498E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.457E-06	0.0000	1.975E-05	0.0000	0.000E+00	0.0000	2.015E-01	0.0311	7.443E-05	0.0000	8.633E-06	0.0000	3.093E-04	0.0000
Np-237	1.226E-02	0.0019	2.395E-05	0.0000	0.000E+00	0.0000	4.907E+00	0.7564	2.916E-02	0.0045	7.878E-04	0.0001	3.766E-04	0.0001
Pu-239	1.982E-06	0.0000	1.912E-05	0.0000	0.000E+00	0.0000	1.964E-01	0.0303	1.451E-04	0.0000	4.165E-06	0.0000	3.015E-04	0.0000
Pu-240	4.532E-08	0.0000	1.912E-05	0.0000	0.000E+00	0.0000	1.964E-01	0.0303	1.451E-04	0.0000	4.165E-06	0.0000	3.014E-04	0.0000
Tc-99	1.220E-07	0.0000	3.705E-10	0.0000	0.000E+00	0.0000	7.500E-01	0.1156	4.355E-04	0.0001	1.183E-02	0.0018	1.242E-07	0.0000
U-234	5.528E-07	0.0000	5.882E-06	0.0000	0.000E+00	0.0000	5.807E-02	0.0090	4.738E-04	0.0001	6.026E-04	0.0001	2.409E-05	0.0000
U-235	5.293E-03	0.0008	5.483E-06	0.0000	0.000E+00	0.0000	5.504E-02	0.0085	4.476E-04	0.0001	5.693E-04	0.0001	2.279E-05	0.0000
U-238	3.068E-03	0.0005	5.260E-06	0.0000	0.000E+00	0.0000	5.513E-02	0.0085	4.498E-04	0.0001	5.721E-04	0.0001	2.288E-05	0.0000
Total	2.063E-02	0.0032	9.857E-05	0.0000	0.000E+00	0.0000	6.420E+00	0.9895	3.134E-02	0.0048	1.438E-02	0.0022	1.359E-03	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.019E-01	0.0311
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.950E+00	0.7630
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.968E-01	0.0303
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.968E-01	0.0303
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.623E-01	0.1175
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.917E-02	0.0091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.138E-02	0.0095
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.925E-02	0.0091
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.488E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.680E-06	0.0000	4.593E-05	0.0000	0.000E+00	0.0000	2.011E-01	0.0311	9.548E-05	0.0000	1.165E-05	0.0000	7.193E-04	0.0001
Np-237	1.248E-02	0.0019	5.554E-05	0.0000	0.000E+00	0.0000	4.883E+00	0.7551	2.954E-02	0.0046	8.024E-04	0.0001	8.731E-04	0.0001
Pu-239	2.037E-06	0.0000	4.461E-05	0.0000	0.000E+00	0.0000	1.967E-01	0.0304	1.866E-04	0.0000	5.639E-06	0.0000	7.033E-04	0.0001
Pu-240	4.735E-08	0.0000	4.460E-05	0.0000	0.000E+00	0.0000	1.966E-01	0.0304	1.866E-04	0.0000	5.637E-06	0.0000	7.031E-04	0.0001
Tc-99	1.272E-07	0.0000	8.632E-10	0.0000	0.000E+00	0.0000	7.501E-01	0.1160	4.355E-04	0.0001	1.183E-02	0.0018	2.894E-07	0.0000
U-234	5.817E-07	0.0000	1.372E-05	0.0000	0.000E+00	0.0000	5.812E-02	0.0090	5.171E-04	0.0001	6.742E-04	0.0001	5.618E-05	0.0000
U-235	5.441E-03	0.0008	1.279E-05	0.0000	0.000E+00	0.0000	5.534E-02	0.0086	4.886E-04	0.0001	6.369E-04	0.0001	5.324E-05	0.0000
U-238	3.123E-03	0.0005	1.226E-05	0.0000	0.000E+00	0.0000	5.519E-02	0.0085	4.910E-04	0.0001	6.401E-04	0.0001	5.334E-05	0.0000
Total	2.105E-02	0.0033	2.295E-04	0.0000	0.000E+00	0.0000	6.397E+00	0.9890	3.194E-02	0.0049	1.460E-02	0.0023	3.162E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.020E-01	0.0312
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.927E+00	0.7618
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.976E-01	0.0306
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.975E-01	0.0305
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.624E-01	0.1179
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.938E-02	0.0092
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.198E-02	0.0096
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.951E-02	0.0092
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.468E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.572E-06	0.0000	1.362E-04	0.0000	0.000E+00	0.0000	2.000E-01	0.0313	1.681E-04	0.0000	2.206E-05	0.0000	2.134E-03	0.0003
Np-237	1.328E-02	0.0021	1.629E-04	0.0000	0.000E+00	0.0000	4.801E+00	0.7503	3.079E-02	0.0048	8.517E-04	0.0001	2.561E-03	0.0004
Pu-239	2.240E-06	0.0000	1.338E-04	0.0000	0.000E+00	0.0000	1.976E-01	0.0309	3.320E-04	0.0001	1.079E-05	0.0000	2.109E-03	0.0003
Pu-240	5.521E-08	0.0000	1.336E-04	0.0000	0.000E+00	0.0000	1.975E-01	0.0309	3.317E-04	0.0001	1.078E-05	0.0000	2.107E-03	0.0003
Tc-99	1.469E-07	0.0000	2.576E-09	0.0000	0.000E+00	0.0000	7.502E-01	0.1173	4.357E-04	0.0001	1.183E-02	0.0018	8.635E-07	0.0000
U-234	7.390E-07	0.0000	4.106E-05	0.0000	0.000E+00	0.0000	5.831E-02	0.0091	6.685E-04	0.0001	9.241E-04	0.0001	1.682E-04	0.0000
U-235	5.991E-03	0.0009	3.841E-05	0.0000	0.000E+00	0.0000	5.643E-02	0.0088	6.317E-04	0.0001	8.731E-04	0.0001	1.605E-04	0.0000
U-238	3.325E-03	0.0005	3.671E-05	0.0000	0.000E+00	0.0000	5.537E-02	0.0087	6.348E-04	0.0001	8.774E-04	0.0001	1.597E-04	0.0000
Total	2.260E-02	0.0035	6.827E-04	0.0001	0.000E+00	0.0000	6.316E+00	0.9872	3.399E-02	0.0053	1.540E-02	0.0024	9.399E-03	0.0015

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.025E-01	0.0316
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.848E+00	0.7578
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.002E-01	0.0313
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.000E-01	0.0313
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.625E-01	0.1192
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.011E-02	0.0094
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.412E-02	0.0100
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.040E-02	0.0094
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.398E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.428E-06	0.0000	3.832E-04	0.0001	0.000E+00	0.0000	1.968E-01	0.0317	3.666E-04	0.0001	5.053E-05	0.0000	6.001E-03	0.0010
Np-237	1.584E-02	0.0026	4.435E-04	0.0001	0.000E+00	0.0000	4.571E+00	0.7365	3.399E-02	0.0055	9.785E-04	0.0002	6.971E-03	0.0011
Pu-239	2.941E-06	0.0000	3.878E-04	0.0001	0.000E+00	0.0000	2.004E-01	0.0323	7.461E-04	0.0001	2.547E-05	0.0000	6.113E-03	0.0010
Pu-240	8.561E-08	0.0000	3.868E-04	0.0001	0.000E+00	0.0000	1.999E-01	0.0322	7.444E-04	0.0001	2.542E-05	0.0000	6.098E-03	0.0010
Tc-99	2.219E-07	0.0000	7.367E-09	0.0000	0.000E+00	0.0000	7.504E-01	0.1209	4.359E-04	0.0001	1.184E-02	0.0019	2.470E-06	0.0000
U-234	1.780E-06	0.0000	1.185E-04	0.0000	0.000E+00	0.0000	5.886E-02	0.0095	1.097E-03	0.0002	1.632E-03	0.0003	4.854E-04	0.0001
U-235	7.893E-03	0.0013	1.125E-04	0.0000	0.000E+00	0.0000	5.965E-02	0.0096	1.037E-03	0.0002	1.542E-03	0.0002	4.761E-04	0.0001
U-238	3.975E-03	0.0006	1.059E-04	0.0000	0.000E+00	0.0000	5.588E-02	0.0090	1.042E-03	0.0002	1.549E-03	0.0002	4.607E-04	0.0001
Total	2.772E-02	0.0045	1.938E-03	0.0003	0.000E+00	0.0000	6.092E+00	0.9817	3.945E-02	0.0064	1.764E-02	0.0028	2.661E-02	0.0043

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.036E-01	0.0328
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.629E+00	0.7459
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.076E-01	0.0335
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.071E-01	0.0334
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.627E-01	0.1229
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.219E-02	0.0100
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.071E-02	0.0114
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.301E-02	0.0102
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.206E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.915E-05	0.0000	1.128E-03	0.0002	0.000E+00	0.0000	1.854E-01	0.0331	9.652E-04	0.0002	1.363E-04	0.0000	1.766E-02	0.0031
Np-237	2.946E-02	0.0053	1.165E-03	0.0002	0.000E+00	0.0000	3.842E+00	0.6849	4.140E-02	0.0074	1.284E-03	0.0002	1.831E-02	0.0033
Pu-239	7.616E-06	0.0000	1.269E-03	0.0002	0.000E+00	0.0000	2.099E-01	0.0374	2.183E-03	0.0004	7.642E-05	0.0000	2.001E-02	0.0036
Pu-240	3.974E-07	0.0000	1.259E-03	0.0002	0.000E+00	0.0000	2.083E-01	0.0371	2.166E-03	0.0004	7.584E-05	0.0000	1.985E-02	0.0035
Tc-99	9.401E-07	0.0000	2.300E-08	0.0000	0.000E+00	0.0000	7.498E-01	0.1337	4.361E-04	0.0001	1.185E-02	0.0021	7.709E-06	0.0000
U-234	1.877E-05	0.0000	3.821E-04	0.0001	0.000E+00	0.0000	6.078E-02	0.0108	2.554E-03	0.0005	4.036E-03	0.0007	1.565E-03	0.0003
U-235	2.078E-02	0.0037	3.927E-04	0.0001	0.000E+00	0.0000	7.182E-02	0.0128	2.416E-03	0.0004	3.816E-03	0.0007	1.725E-03	0.0003
U-238	7.487E-03	0.0013	3.411E-04	0.0001	0.000E+00	0.0000	5.759E-02	0.0103	2.425E-03	0.0004	3.832E-03	0.0007	1.484E-03	0.0003
Total	5.783E-02	0.0103	5.937E-03	0.0011	0.000E+00	0.0000	5.385E+00	0.9601	5.454E-02	0.0097	2.511E-02	0.0045	8.061E-02	0.0144

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.054E-01	0.0366
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.934E+00	0.7012
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.334E-01	0.0416
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.316E-01	0.0413
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.621E-01	0.1359
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.933E-02	0.0124
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.009E-01	0.0180
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.316E-02	0.0130
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.610E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.596E-03	0.0015	2.032E-03	0.0005	0.000E+00	0.0000	1.493E-01	0.0342	1.688E-03	0.0004	2.399E-04	0.0001	3.182E-02	0.0073
Np-237	9.898E-02	0.0227	1.516E-03	0.0003	0.000E+00	0.0000	2.232E+00	0.5112	3.764E-02	0.0086	1.239E-03	0.0003	2.382E-02	0.0055
Pu-239	6.896E-05	0.0000	3.096E-03	0.0007	0.000E+00	0.0000	2.287E-01	0.0524	5.163E-03	0.0012	1.820E-04	0.0000	4.881E-02	0.0112
Pu-240	3.451E-05	0.0000	3.025E-03	0.0007	0.000E+00	0.0000	2.234E-01	0.0512	5.044E-03	0.0012	1.779E-04	0.0000	4.769E-02	0.0109
Tc-99	2.399E-05	0.0000	4.901E-08	0.0000	0.000E+00	0.0000	7.135E-01	0.1635	4.160E-04	0.0001	1.131E-02	0.0026	1.643E-05	0.0000
U-234	5.208E-04	0.0001	8.932E-04	0.0002	0.000E+00	0.0000	6.438E-02	0.0147	5.370E-03	0.0012	8.690E-03	0.0020	3.670E-03	0.0008
U-235	1.674E-01	0.0383	1.153E-03	0.0003	0.000E+00	0.0000	1.071E-01	0.0245	5.084E-03	0.0012	8.202E-03	0.0019	5.466E-03	0.0013
U-238	3.264E-02	0.0075	7.946E-04	0.0002	0.000E+00	0.0000	5.989E-02	0.0137	5.085E-03	0.0012	8.223E-03	0.0019	3.455E-03	0.0008
Total	3.063E-01	0.0702	1.251E-02	0.0029	0.000E+00	0.0000	3.778E+00	0.8655	6.549E-02	0.0150	3.827E-02	0.0088	1.648E-01	0.0377

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.917E-01	0.0439
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.395E+00	0.5486
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.860E-01	0.0655
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.794E-01	0.0640
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.253E-01	0.1662
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.352E-02	0.0191
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.944E-01	0.0674
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.101E-01	0.0252
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.365E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.136E-03	0.0012	6.568E-04	0.0004	0.000E+00	0.0000	4.835E-02	0.0274	5.471E-04	0.0003	7.759E-05	0.0000	1.029E-02	0.0058
Np-237	1.026E-02	0.0058	1.589E-04	0.0001	0.000E+00	0.0000	2.308E-01	0.1309	3.898E-03	0.0022	1.373E-04	0.0001	2.471E-03	0.0014
Pu-239	6.454E-05	0.0000	2.893E-03	0.0016	0.000E+00	0.0000	2.136E-01	0.1212	4.824E-03	0.0027	1.701E-04	0.0001	4.561E-02	0.0259
Pu-240	3.055E-05	0.0000	2.678E-03	0.0015	0.000E+00	0.0000	1.977E-01	0.1121	4.466E-03	0.0025	1.576E-04	0.0001	4.222E-02	0.0239
Tc-99	1.397E-05	0.0000	2.853E-08	0.0000	0.000E+00	0.0000	4.153E-01	0.2355	2.421E-04	0.0001	6.584E-03	0.0037	9.566E-06	0.0000
U-234	4.071E-03	0.0023	7.204E-04	0.0004	0.000E+00	0.0000	6.266E-02	0.0355	4.457E-03	0.0025	7.275E-03	0.0041	3.108E-03	0.0018
U-235	1.393E-01	0.0790	1.665E-03	0.0009	0.000E+00	0.0000	1.865E-01	0.1058	4.099E-03	0.0023	6.563E-03	0.0037	8.889E-03	0.0050
U-238	2.588E-02	0.0147	6.312E-04	0.0004	0.000E+00	0.0000	4.757E-02	0.0270	4.039E-03	0.0023	6.532E-03	0.0037	2.745E-03	0.0016
Total	1.818E-01	0.1031	9.404E-03	0.0053	0.000E+00	0.0000	1.402E+00	0.7955	2.657E-02	0.0151	2.750E-02	0.0156	1.153E-01	0.0654

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.206E-02	0.0352
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.477E-01	0.1405
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.672E-01	0.1515
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.473E-01	0.1403
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.221E-01	0.2394
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.229E-02	0.0467
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.471E-01	0.1969
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.739E-02	0.0496
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.763E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.018E-01	2.019E-01	2.020E-01	2.025E-01	2.035E-01	2.053E-01	1.914E-01	6.186E-02
Am-241	Np-237+D	1.000E+00	7.567E-07	2.357E-06	5.550E-06	1.658E-05	4.683E-05	1.391E-04	3.006E-04	2.018E-04
Am-241	U-233	1.000E+00	2.014E-14	1.185E-13	5.717E-13	4.861E-12	4.048E-11	4.411E-10	3.570E-09	1.374E-08
Am-241	Th-229+D	1.000E+00	1.958E-18	2.431E-17	2.606E-16	6.674E-15	1.665E-13	6.826E-12	2.999E-10	4.993E-09
Am-241	ΣDSR (j)		2.018E-01	2.019E-01	2.020E-01	2.025E-01	2.036E-01	2.054E-01	1.917E-01	6.206E-02
Np-237+D	Np-237+D	1.000E+00	4.961E+00	4.950E+00	4.927E+00	4.848E+00	4.629E+00	3.934E+00	2.395E+00	2.475E-01
Np-237+D	U-233	1.000E+00	1.685E-07	4.355E-07	9.634E-07	2.816E-06	8.142E-06	2.696E-05	7.319E-05	9.384E-05
Np-237+D	Th-229+D	1.000E+00	2.204E-11	1.330E-10	6.646E-10	5.838E-09	5.059E-08	6.354E-07	9.596E-06	5.494E-05
Np-237+D	ΣDSR (j)		4.961E+00	4.950E+00	4.927E+00	4.848E+00	4.629E+00	3.934E+00	2.395E+00	2.477E-01
Pu-239	Pu-239	1.000E+00	1.965E-01	1.968E-01	1.976E-01	2.002E-01	2.076E-01	2.334E-01	2.860E-01	2.672E-01
Pu-239	U-235+D	1.000E+00	2.879E-11	8.903E-11	2.108E-10	6.486E-10	2.007E-09	8.610E-09	7.408E-08	2.127E-07
Pu-239	Pa-231	1.000E+00	1.921E-14	1.393E-13	7.485E-13	6.783E-12	5.819E-11	6.643E-10	6.499E-09	6.426E-08
Pu-239	Ac-227+D	1.000E+00	4.751E-17	5.266E-16	4.978E-15	1.111E-13	2.338E-12	6.338E-11	1.270E-09	1.450E-08
Pu-239	ΣDSR (j)		1.965E-01	1.968E-01	1.976E-01	2.002E-01	2.076E-01	2.334E-01	2.860E-01	2.672E-01
Pu-240	Pu-240	4.950E-08	9.725E-09	9.743E-09	9.778E-09	9.902E-09	1.025E-08	1.147E-08	1.383E-08	1.224E-08
Pu-240	Pu-240	1.000E+00	1.965E-01	1.968E-01	1.975E-01	2.000E-01	2.071E-01	2.316E-01	2.794E-01	2.473E-01
Pu-240	U-236	1.000E+00	7.926E-10	2.456E-09	5.808E-09	1.773E-08	5.344E-08	1.971E-07	7.065E-07	1.972E-06
Pu-240	Th-232	1.000E+00	4.593E-20	2.862E-19	1.433E-18	1.259E-17	1.093E-16	1.342E-15	1.481E-14	1.460E-13
Pu-240	Ra-228+D	1.000E+00	3.887E-20	6.102E-19	6.984E-18	1.579E-16	2.589E-15	4.270E-14	5.199E-13	5.332E-12
Pu-240	Th-228+D	1.000E+00	4.673E-22	1.037E-20	1.854E-19	7.763E-18	1.993E-16	5.353E-15	1.480E-13	1.538E-12
Pu-240	ΣDSR (j)		1.965E-01	1.968E-01	1.975E-01	2.000E-01	2.071E-01	2.316E-01	2.794E-01	2.473E-01
Tc-99	Tc-99	1.000E+00	7.623E-01	7.623E-01	7.624E-01	7.625E-01	7.627E-01	7.621E-01	7.253E-01	4.221E-01
U-234	U-234	1.000E+00	5.907E-02	5.917E-02	5.938E-02	6.011E-02	6.217E-02	6.915E-02	8.157E-02	6.451E-02
U-234	Th-230	1.000E+00	1.587E-07	4.336E-07	9.826E-07	2.940E-06	8.840E-06	3.301E-05	1.224E-04	3.626E-04
U-234	Ra-226+D	1.000E+00	3.477E-09	2.574E-08	1.396E-07	1.273E-06	1.102E-05	1.305E-04	1.530E-03	1.417E-02
U-234	Pb-210+D	1.000E+00	2.528E-11	2.512E-10	2.112E-09	4.216E-08	8.331E-07	2.071E-05	3.041E-04	3.256E-03
U-234	ΣDSR (j)		5.907E-02	5.917E-02	5.938E-02	6.011E-02	6.219E-02	6.933E-02	8.352E-02	8.229E-02
U-235+D	U-235+D	1.000E+00	6.102E-02	6.119E-02	6.154E-02	6.278E-02	6.662E-02	8.598E-02	2.416E-01	1.915E-01
U-235+D	Pa-231	1.000E+00	5.987E-05	1.842E-04	4.338E-04	1.313E-03	3.872E-03	1.338E-02	4.348E-02	1.262E-01
U-235+D	Ac-227+D	1.000E+00	1.709E-07	8.943E-07	3.974E-06	3.055E-05	2.150E-04	1.587E-03	9.363E-03	2.939E-02
U-235+D	ΣDSR (j)		6.108E-02	6.138E-02	6.198E-02	6.412E-02	7.071E-02	1.009E-01	2.944E-01	3.471E-01
U-238	U-238	5.400E-05	2.874E-06	2.879E-06	2.889E-06	2.925E-06	3.025E-06	3.365E-06	3.969E-06	3.145E-06
U-238+D	U-238+D	9.999E-01	5.912E-02	5.925E-02	5.950E-02	6.039E-02	6.300E-02	7.314E-02	1.100E-01	8.719E-02
U-238+D	U-234	9.999E-01	8.375E-08	2.516E-07	5.892E-07	1.789E-06	5.376E-06	1.970E-05	6.951E-05	1.832E-04
U-238+D	Th-230	9.999E-01	1.624E-13	1.005E-12	5.028E-12	4.414E-11	3.827E-10	4.681E-09	5.133E-08	4.869E-07
U-238+D	Ra-226+D	9.999E-01	2.391E-15	3.838E-14	4.637E-13	1.261E-11	3.170E-10	1.236E-08	4.320E-07	1.314E-05
U-238+D	Pb-210+D	9.999E-01	1.628E-17	3.346E-16	5.914E-15	3.343E-13	1.913E-11	1.657E-09	7.875E-08	2.933E-06
U-238+D	ΣDSR (j)		5.912E-02	5.925E-02	5.950E-02	6.040E-02	6.301E-02	7.315E-02	1.101E-01	8.739E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		1.239E+02	1.238E+02	1.238E+02	1.235E+02	1.228E+02	1.217E+02	1.304E+02	4.029E+02
Np-237		5.039E+00	5.050E+00	5.074E+00	5.157E+00	5.401E+00	6.356E+00	1.044E+01	1.009E+02
Pu-239		1.272E+02	1.270E+02	1.265E+02	1.249E+02	1.204E+02	1.071E+02	8.742E+01	9.357E+01
Pu-240		1.272E+02	1.270E+02	1.266E+02	1.250E+02	1.207E+02	1.079E+02	8.948E+01	1.011E+02
Tc-99		3.280E+01	3.279E+01	3.279E+01	3.279E+01	3.278E+01	3.281E+01	3.447E+01	5.923E+01
U-234		4.232E+02	4.225E+02	4.210E+02	4.159E+02	4.020E+02	3.606E+02	2.993E+02	3.038E+02
U-235		4.093E+02	4.073E+02	4.034E+02	3.899E+02	3.536E+02	2.477E+02	8.492E+01	7.203E+01
U-238		4.228E+02	4.219E+02	4.201E+02	4.139E+02	3.968E+02	3.417E+02	2.271E+02	2.861E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	249.6 ± 0.5	2.079E-01	1.203E+02	2.018E-01	1.239E+02
Np-237	1.000E+00	0.000E+00	4.961E+00	5.039E+00	4.961E+00	5.039E+00
Pu-239	1.000E+00	249.9 ± 0.5	2.874E-01	8.699E+01	1.965E-01	1.272E+02
Pu-240	1.000E+00	250.0 ± 0.5	2.818E-01	8.870E+01	1.965E-01	1.272E+02
Tc-99	1.000E+00	44.26 ± 0.09	7.627E-01	3.278E+01	7.623E-01	3.280E+01
U-234	1.000E+00	249.9 ± 0.5	8.433E-02	2.965E+02	5.907E-02	4.232E+02
U-235	1.000E+00	1.000E+03	3.471E-01	7.203E+01	6.108E-02	4.093E+02
U-238	1.000E+00	250.0 ± 0.5	1.119E-01	2.234E+02	5.913E-02	4.228E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.018E-01	2.019E-01	2.020E-01	2.025E-01	2.035E-01	2.053E-01	1.914E-01	6.186E-02
Np-237	Am-241	1.000E+00	7.567E-07	2.357E-06	5.550E-06	1.658E-05	4.683E-05	1.391E-04	3.006E-04	2.018E-04
Np-237	Np-237	1.000E+00	4.961E+00	4.950E+00	4.927E+00	4.848E+00	4.629E+00	3.934E+00	2.395E+00	2.475E-01
Np-237	ΣDOSE (j)		4.961E+00	4.950E+00	4.927E+00	4.848E+00	4.629E+00	3.934E+00	2.395E+00	2.477E-01
U-233	Am-241	1.000E+00	2.014E-14	1.185E-13	5.717E-13	4.861E-12	4.048E-11	4.411E-10	3.570E-09	1.374E-08
U-233	Np-237	1.000E+00	1.685E-07	4.355E-07	9.634E-07	2.816E-06	8.142E-06	2.696E-05	7.319E-05	9.384E-05
U-233	ΣDOSE (j)		1.685E-07	4.355E-07	9.634E-07	2.816E-06	8.142E-06	2.696E-05	7.319E-05	9.386E-05
Th-229	Am-241	1.000E+00	1.958E-18	2.431E-17	2.606E-16	6.674E-15	1.665E-13	6.826E-12	2.999E-10	4.993E-09
Th-229	Np-237	1.000E+00	2.204E-11	1.330E-10	6.646E-10	5.838E-09	5.059E-08	6.354E-07	9.596E-06	5.494E-05
Th-229	ΣDOSE (j)		2.204E-11	1.330E-10	6.646E-10	5.838E-09	5.059E-08	6.354E-07	9.596E-06	5.494E-05
Pu-239	Pu-239	1.000E+00	1.965E-01	1.968E-01	1.976E-01	2.002E-01	2.076E-01	2.334E-01	2.860E-01	2.672E-01
U-235	Pu-239	1.000E+00	2.879E-11	8.903E-11	2.108E-10	6.486E-10	2.007E-09	8.610E-09	7.408E-08	2.127E-07
U-235	U-235	1.000E+00	6.102E-02	6.119E-02	6.154E-02	6.278E-02	6.662E-02	8.598E-02	2.416E-01	1.915E-01
U-235	ΣDOSE (j)		6.102E-02	6.119E-02	6.154E-02	6.278E-02	6.662E-02	8.598E-02	2.416E-01	1.915E-01
Pa-231	Pu-239	1.000E+00	1.921E-14	1.393E-13	7.485E-13	6.783E-12	5.819E-11	6.643E-10	6.499E-09	6.426E-08
Pa-231	U-235	1.000E+00	5.987E-05	1.842E-04	4.338E-04	1.313E-03	3.872E-03	1.338E-02	4.348E-02	1.262E-01
Pa-231	ΣDOSE (j)		5.987E-05	1.842E-04	4.338E-04	1.313E-03	3.872E-03	1.338E-02	4.348E-02	1.262E-01
Ac-227	Pu-239	1.000E+00	4.751E-17	5.266E-16	4.978E-15	1.111E-13	2.338E-12	6.338E-11	1.270E-09	1.450E-08
Ac-227	U-235	1.000E+00	1.709E-07	8.943E-07	3.974E-06	3.055E-05	2.150E-04	1.587E-03	9.363E-03	2.939E-02
Ac-227	ΣDOSE (j)		1.709E-07	8.943E-07	3.974E-06	3.055E-05	2.150E-04	1.587E-03	9.363E-03	2.939E-02
Pu-240	Pu-240	4.950E-08	9.725E-09	9.743E-09	9.778E-09	9.902E-09	1.025E-08	1.147E-08	1.383E-08	1.224E-08
Pu-240	Pu-240	1.000E+00	1.965E-01	1.968E-01	1.975E-01	2.000E-01	2.071E-01	2.316E-01	2.794E-01	2.473E-01
Pu-240	ΣDOSE (j)		1.965E-01	1.968E-01	1.975E-01	2.000E-01	2.071E-01	2.316E-01	2.794E-01	2.473E-01
U-236	Pu-240	1.000E+00	7.926E-10	2.456E-09	5.808E-09	1.773E-08	5.344E-08	1.971E-07	7.065E-07	1.972E-06
Th-232	Pu-240	1.000E+00	4.593E-20	2.862E-19	1.433E-18	1.259E-17	1.093E-16	1.342E-15	1.481E-14	1.460E-13
Ra-228	Pu-240	1.000E+00	3.887E-20	6.102E-19	6.984E-18	1.579E-16	2.589E-15	4.270E-14	5.199E-13	5.332E-12
Th-228	Pu-240	1.000E+00	4.673E-22	1.037E-20	1.854E-19	7.763E-18	1.993E-16	5.353E-15	1.480E-13	1.538E-12
Tc-99	Tc-99	1.000E+00	7.623E-01	7.623E-01	7.624E-01	7.625E-01	7.627E-01	7.621E-01	7.253E-01	4.221E-01
U-234	U-234	1.000E+00	5.907E-02	5.917E-02	5.938E-02	6.011E-02	6.217E-02	6.915E-02	8.157E-02	6.451E-02
U-234	U-238	9.999E-01	8.375E-08	2.516E-07	5.892E-07	1.789E-06	5.376E-06	1.970E-05	6.951E-05	1.832E-04
U-234	ΣDOSE (j)		5.907E-02	5.917E-02	5.938E-02	6.011E-02	6.218E-02	6.917E-02	8.164E-02	6.469E-02
Th-230	U-234	1.000E+00	1.587E-07	4.336E-07	9.826E-07	2.940E-06	8.840E-06	3.301E-05	1.224E-04	3.626E-04
Th-230	U-238	9.999E-01	1.624E-13	1.005E-12	5.028E-12	4.414E-11	3.827E-10	4.681E-09	5.133E-08	4.869E-07
Th-230	ΣDOSE (j)		1.587E-07	4.336E-07	9.826E-07	2.940E-06	8.841E-06	3.302E-05	1.225E-04	3.631E-04

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	3.477E-09	2.574E-08	1.396E-07	1.273E-06	1.102E-05	1.305E-04	1.530E-03	1.417E-02
Ra-226	U-238	9.999E-01	2.391E-15	3.838E-14	4.637E-13	1.261E-11	3.170E-10	1.236E-08	4.320E-07	1.314E-05
Ra-226	ΣDOSE(j)		3.477E-09	2.574E-08	1.396E-07	1.273E-06	1.102E-05	1.305E-04	1.530E-03	1.418E-02
Pb-210	U-234	1.000E+00	2.528E-11	2.512E-10	2.112E-09	4.216E-08	8.331E-07	2.071E-05	3.041E-04	3.256E-03
Pb-210	U-238	9.999E-01	1.628E-17	3.346E-16	5.914E-15	3.343E-13	1.913E-11	1.657E-09	7.875E-08	2.933E-06
Pb-210	ΣDOSE(j)		2.528E-11	2.512E-10	2.112E-09	4.216E-08	8.332E-07	2.071E-05	3.041E-04	3.259E-03
U-238	U-238	5.400E-05	2.874E-06	2.879E-06	2.889E-06	2.925E-06	3.025E-06	3.365E-06	3.969E-06	3.145E-06
U-238	U-238	9.999E-01	5.912E-02	5.925E-02	5.950E-02	6.039E-02	6.300E-02	7.314E-02	1.100E-01	8.719E-02
U-238	ΣDOSE(j)		5.913E-02	5.925E-02	5.951E-02	6.040E-02	6.300E-02	7.314E-02	1.100E-01	8.719E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 10,000 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.06 seconds

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Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Root CSM - AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Root CSM - AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsat. zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsat. zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Am-241	1.000E+00
Thickness:	1.35 meters	Np-237	1.000E+00
Cover Depth:	0.15 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr							
Basic Radiation Dose Limit = 2.500E+01 mrem/yr							
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)							
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	2.929E-02	2.937E-02	2.954E-02	3.015E-02	3.215E-02	4.324E-02	9.384E-02
M(t):	1.172E-03	1.175E-03	1.182E-03	1.206E-03	1.286E-03	1.730E-03	3.754E-03
Maximum TDOSE(t): 1.005E-01 mrem/yr at t = 249.6 ± 0.5 years							

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.496E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Nuclide														
Am-241	1.897E-03	0.0189	9.045E-04	0.0090	0.000E+00	0.0000	4.858E-04	0.0048	5.487E-07	0.0000	7.803E-08	0.0000	1.035E-04	0.0010
Np-237	2.904E-02	0.2888	7.325E-04	0.0073	0.000E+00	0.0000	7.883E-03	0.0784	1.329E-05	0.0001	4.370E-07	0.0000	8.411E-05	0.0008
Pu-239	1.769E-05	0.0002	1.277E-03	0.0127	0.000E+00	0.0000	6.893E-04	0.0069	1.556E-06	0.0000	5.485E-08	0.0000	1.471E-04	0.0015
Pu-240	1.016E-05	0.0001	1.253E-03	0.0125	0.000E+00	0.0000	6.761E-04	0.0067	1.526E-06	0.0000	5.382E-08	0.0000	1.443E-04	0.0014
Tc-99	6.382E-06	0.0001	2.091E-08	0.0000	0.000E+00	0.0000	2.225E-03	0.0221	1.297E-07	0.0000	3.528E-06	0.0000	5.123E-08	0.0000
U-234	9.514E-05	0.0009	3.724E-04	0.0037	0.000E+00	0.0000	1.951E-04	0.0019	1.635E-06	0.0000	2.646E-06	0.0000	1.116E-05	0.0001
U-235	4.293E-02	0.4270	4.554E-04	0.0045	0.000E+00	0.0000	3.012E-04	0.0030	1.549E-06	0.0000	2.500E-06	0.0000	1.553E-05	0.0002
U-238	8.033E-03	0.0799	3.315E-04	0.0033	0.000E+00	0.0000	1.827E-04	0.0018	1.550E-06	0.0000	2.507E-06	0.0000	1.054E-05	0.0001
Total	8.203E-02	0.8159	5.326E-03	0.0530	0.000E+00	0.0000	1.264E-02	0.1257	2.179E-05	0.0002	1.180E-05	0.0001	5.163E-04	0.0051

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.496E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.391E-03	0.0337
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.775E-02	0.3755
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.133E-03	0.0212
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.085E-03	0.0207
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.236E-03	0.0222
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.780E-04	0.0067
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.371E-02	0.4347
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.561E-03	0.0852
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.005E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.606E-06	0.0001	2.706E-06	0.0001	0.000E+00	0.0000	6.049E-04	0.0207	1.917E-08	0.0000	2.135E-09	0.0000	3.097E-07	0.0000
Np-237	5.893E-03	0.2012	3.288E-06	0.0001	0.000E+00	0.0000	1.476E-02	0.5039	8.693E-06	0.0003	2.341E-07	0.0000	3.777E-07	0.0000
Pu-239	9.772E-07	0.0000	2.617E-06	0.0001	0.000E+00	0.0000	5.887E-04	0.0201	3.732E-08	0.0000	1.029E-09	0.0000	3.015E-07	0.0000
Pu-240	2.543E-08	0.0000	2.617E-06	0.0001	0.000E+00	0.0000	5.887E-04	0.0201	3.732E-08	0.0000	1.029E-09	0.0000	3.015E-07	0.0000
Tc-99	6.856E-08	0.0000	5.074E-11	0.0000	0.000E+00	0.0000	2.250E-03	0.0768	1.306E-07	0.0000	3.548E-06	0.0001	1.243E-10	0.0000
U-234	3.161E-07	0.0000	8.052E-07	0.0000	0.000E+00	0.0000	1.741E-04	0.0059	1.356E-07	0.0000	1.700E-07	0.0000	2.410E-08	0.0000
U-235	2.759E-03	0.0942	7.504E-07	0.0000	0.000E+00	0.0000	1.647E-04	0.0056	1.281E-07	0.0000	1.606E-07	0.0000	2.278E-08	0.0000
U-238	1.309E-03	0.0447	7.200E-07	0.0000	0.000E+00	0.0000	1.653E-04	0.0056	1.288E-07	0.0000	1.614E-07	0.0000	2.288E-08	0.0000
Total	9.966E-03	0.3403	1.350E-05	0.0005	0.000E+00	0.0000	1.929E-02	0.6588	9.310E-06	0.0003	4.278E-06	0.0001	1.360E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.105E-04	0.0208
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.066E-02	0.7055
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.927E-04	0.0202
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.917E-04	0.0202
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-03	0.0770
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.756E-04	0.0060
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.925E-03	0.0999
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.475E-03	0.0504
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.929E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.684E-06	0.0001	8.107E-06	0.0003	0.000E+00	0.0000	6.044E-04	0.0206	2.233E-08	0.0000	2.590E-09	0.0000	9.278E-07	0.0000
Np-237	5.937E-03	0.2021	9.835E-06	0.0003	0.000E+00	0.0000	1.472E-02	0.5012	8.749E-06	0.0003	2.363E-07	0.0000	1.130E-06	0.0000
Pu-239	9.891E-07	0.0000	7.851E-06	0.0003	0.000E+00	0.0000	5.891E-04	0.0201	4.352E-08	0.0000	1.250E-09	0.0000	9.044E-07	0.0000
Pu-240	2.595E-08	0.0000	7.850E-06	0.0003	0.000E+00	0.0000	5.891E-04	0.0201	4.352E-08	0.0000	1.249E-09	0.0000	9.043E-07	0.0000
Tc-99	6.988E-08	0.0000	1.521E-10	0.0000	0.000E+00	0.0000	2.250E-03	0.0766	1.306E-07	0.0000	3.548E-06	0.0001	3.726E-10	0.0000
U-234	3.224E-07	0.0000	2.415E-06	0.0001	0.000E+00	0.0000	1.742E-04	0.0059	1.421E-07	0.0000	1.808E-07	0.0000	7.228E-08	0.0000
U-235	2.793E-03	0.0951	2.251E-06	0.0001	0.000E+00	0.0000	1.651E-04	0.0056	1.343E-07	0.0000	1.708E-07	0.0000	6.837E-08	0.0000
U-238	1.319E-03	0.0449	2.159E-06	0.0001	0.000E+00	0.0000	1.654E-04	0.0056	1.350E-07	0.0000	1.716E-07	0.0000	6.863E-08	0.0000
Total	1.005E-02	0.3423	4.047E-05	0.0014	0.000E+00	0.0000	1.926E-02	0.6557	9.401E-06	0.0003	4.313E-06	0.0001	4.076E-06	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.161E-04	0.0210
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.068E-02	0.7041
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.989E-04	0.0204
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.979E-04	0.0204
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-03	0.0767
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.773E-04	0.0060
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.961E-03	0.1008
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.487E-03	0.0506
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.937E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.846E-06	0.0001	1.886E-05	0.0006	0.000E+00	0.0000	6.034E-04	0.0204	2.864E-08	0.0000	3.496E-09	0.0000	2.158E-06	0.0001
Np-237	6.025E-03	0.2040	2.280E-05	0.0008	0.000E+00	0.0000	1.465E-02	0.4960	8.861E-06	0.0003	2.407E-07	0.0000	2.619E-06	0.0001
Pu-239	1.014E-06	0.0000	1.832E-05	0.0006	0.000E+00	0.0000	5.900E-04	0.0200	5.599E-08	0.0000	1.692E-09	0.0000	2.110E-06	0.0001
Pu-240	2.703E-08	0.0000	1.831E-05	0.0006	0.000E+00	0.0000	5.898E-04	0.0200	5.598E-08	0.0000	1.691E-09	0.0000	2.109E-06	0.0001
Tc-99	7.259E-08	0.0000	3.544E-10	0.0000	0.000E+00	0.0000	2.250E-03	0.0762	1.307E-07	0.0000	3.548E-06	0.0001	8.681E-10	0.0000
U-234	3.370E-07	0.0000	5.632E-06	0.0002	0.000E+00	0.0000	1.744E-04	0.0059	1.551E-07	0.0000	2.023E-07	0.0000	1.685E-07	0.0000
U-235	2.862E-03	0.0969	5.253E-06	0.0002	0.000E+00	0.0000	1.660E-04	0.0056	1.466E-07	0.0000	1.911E-07	0.0000	1.597E-07	0.0000
U-238	1.339E-03	0.0453	5.035E-06	0.0002	0.000E+00	0.0000	1.656E-04	0.0056	1.473E-07	0.0000	1.920E-07	0.0000	1.600E-07	0.0000
Total	1.023E-02	0.3464	9.421E-05	0.0032	0.000E+00	0.0000	1.919E-02	0.6497	9.581E-06	0.0003	4.381E-06	0.0001	9.486E-06	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.273E-04	0.0212
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.071E-02	0.7011
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.115E-04	0.0207
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.103E-04	0.0207
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-03	0.0763
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.809E-04	0.0061
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.034E-03	0.1027
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.510E-03	0.0511
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.954E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.492E-06	0.0001	5.593E-05	0.0019	0.000E+00	0.0000	6.000E-04	0.0199	5.042E-08	0.0000	6.619E-09	0.0000	6.401E-06	0.0002
Np-237	6.343E-03	0.2104	6.688E-05	0.0022	0.000E+00	0.0000	1.440E-02	0.4777	9.237E-06	0.0003	2.555E-07	0.0000	7.682E-06	0.0003
Pu-239	1.104E-06	0.0000	5.491E-05	0.0018	0.000E+00	0.0000	5.929E-04	0.0197	9.959E-08	0.0000	3.237E-09	0.0000	6.326E-06	0.0002
Pu-240	3.116E-08	0.0000	5.487E-05	0.0018	0.000E+00	0.0000	5.924E-04	0.0196	9.951E-08	0.0000	3.235E-09	0.0000	6.320E-06	0.0002
Tc-99	8.293E-08	0.0000	1.057E-09	0.0000	0.000E+00	0.0000	2.251E-03	0.0746	1.307E-07	0.0000	3.549E-06	0.0001	2.590E-09	0.0000
U-234	4.109E-07	0.0000	1.686E-05	0.0006	0.000E+00	0.0000	1.749E-04	0.0058	2.006E-07	0.0000	2.772E-07	0.0000	5.045E-07	0.0000
U-235	3.117E-03	0.1034	1.577E-05	0.0005	0.000E+00	0.0000	1.693E-04	0.0056	1.895E-07	0.0000	2.619E-07	0.0000	4.816E-07	0.0000
U-238	1.413E-03	0.0469	1.507E-05	0.0005	0.000E+00	0.0000	1.661E-04	0.0055	1.904E-07	0.0000	2.632E-07	0.0000	4.790E-07	0.0000
Total	1.088E-02	0.3608	2.803E-04	0.0093	0.000E+00	0.0000	1.895E-02	0.6285	1.020E-05	0.0003	4.620E-06	0.0002	2.820E-05	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.659E-04	0.0221
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.083E-02	0.6909
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.553E-04	0.0217
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.537E-04	0.0217
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-03	0.0748
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.932E-04	0.0064
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.303E-03	0.1096
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.595E-03	0.0529
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.015E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.230E-06	0.0002	1.573E-04	0.0049	0.000E+00	0.0000	5.903E-04	0.0184	1.100E-07	0.0000	1.516E-08	0.0000	1.800E-05	0.0006
Np-237	7.345E-03	0.2285	1.821E-04	0.0057	0.000E+00	0.0000	1.371E-02	0.4265	1.020E-05	0.0003	2.935E-07	0.0000	2.091E-05	0.0007
Pu-239	1.407E-06	0.0000	1.592E-04	0.0050	0.000E+00	0.0000	6.011E-04	0.0187	2.238E-07	0.0000	7.642E-09	0.0000	1.834E-05	0.0006
Pu-240	4.676E-08	0.0000	1.588E-04	0.0049	0.000E+00	0.0000	5.997E-04	0.0187	2.233E-07	0.0000	7.625E-09	0.0000	1.830E-05	0.0006
Tc-99	1.212E-07	0.0000	3.024E-09	0.0000	0.000E+00	0.0000	2.251E-03	0.0700	1.308E-07	0.0000	3.552E-06	0.0001	7.409E-09	0.0000
U-234	8.557E-07	0.0000	4.866E-05	0.0015	0.000E+00	0.0000	1.766E-04	0.0055	3.292E-07	0.0000	4.895E-07	0.0000	1.456E-06	0.0000
U-235	3.978E-03	0.1237	4.620E-05	0.0014	0.000E+00	0.0000	1.789E-04	0.0056	3.111E-07	0.0000	4.626E-07	0.0000	1.428E-06	0.0000
U-238	1.645E-03	0.0512	4.349E-05	0.0014	0.000E+00	0.0000	1.676E-04	0.0052	3.126E-07	0.0000	4.648E-07	0.0000	1.382E-06	0.0000
Total	1.298E-02	0.4037	7.958E-04	0.0248	0.000E+00	0.0000	1.828E-02	0.5686	1.184E-05	0.0004	5.293E-06	0.0002	7.983E-05	0.0025

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.720E-04	0.0240
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.127E-02	0.6617
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.803E-04	0.0243
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.771E-04	0.0242
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.255E-03	0.0701
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.284E-04	0.0071
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.205E-03	0.1308
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.859E-03	0.0578
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.215E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.584E-05	0.0011	4.630E-04	0.0107	0.000E+00	0.0000	5.563E-04	0.0129	2.895E-07	0.0000	4.090E-08	0.0000	5.299E-05	0.0012
Np-237	1.223E-02	0.2828	4.782E-04	0.0111	0.000E+00	0.0000	1.153E-02	0.2665	1.242E-05	0.0003	3.851E-07	0.0000	5.493E-05	0.0013
Pu-239	3.268E-06	0.0001	5.210E-04	0.0120	0.000E+00	0.0000	6.297E-04	0.0146	6.549E-07	0.0000	2.293E-08	0.0000	6.002E-05	0.0014
Pu-240	1.918E-07	0.0000	5.170E-04	0.0120	0.000E+00	0.0000	6.248E-04	0.0144	6.499E-07	0.0000	2.275E-08	0.0000	5.955E-05	0.0014
Tc-99	4.537E-07	0.0000	9.441E-09	0.0000	0.000E+00	0.0000	2.249E-03	0.0520	1.308E-07	0.0000	3.555E-06	0.0001	2.313E-08	0.0000
U-234	7.211E-06	0.0002	1.569E-04	0.0036	0.000E+00	0.0000	1.823E-04	0.0042	7.662E-07	0.0000	1.211E-06	0.0000	4.695E-06	0.0001
U-235	9.280E-03	0.2146	1.612E-04	0.0037	0.000E+00	0.0000	2.155E-04	0.0050	7.247E-07	0.0000	1.145E-06	0.0000	5.176E-06	0.0001
U-238	2.815E-03	0.0651	1.401E-04	0.0032	0.000E+00	0.0000	1.728E-04	0.0040	7.275E-07	0.0000	1.150E-06	0.0000	4.451E-06	0.0001
Total	2.438E-02	0.5639	2.437E-03	0.0564	0.000E+00	0.0000	1.616E-02	0.3736	1.636E-05	0.0004	7.532E-06	0.0002	2.418E-04	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.119E-03	0.0259
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.430E-02	0.5620
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.215E-03	0.0281
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.202E-03	0.0278
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.253E-03	0.0521
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.531E-04	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.664E-03	0.2235
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.134E-03	0.0725
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.324E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.753E-03	0.0187	8.342E-04	0.0089	0.000E+00	0.0000	4.480E-04	0.0048	5.063E-07	0.0000	7.196E-08	0.0000	9.547E-05	0.0010
Np-237	2.466E-02	0.2628	6.224E-04	0.0066	0.000E+00	0.0000	6.695E-03	0.0713	1.129E-05	0.0001	3.718E-07	0.0000	7.146E-05	0.0008
Pu-239	1.776E-05	0.0002	1.271E-03	0.0135	0.000E+00	0.0000	6.860E-04	0.0073	1.549E-06	0.0000	5.461E-08	0.0000	1.464E-04	0.0016
Pu-240	1.044E-05	0.0001	1.242E-03	0.0132	0.000E+00	0.0000	6.702E-04	0.0071	1.513E-06	0.0000	5.338E-08	0.0000	1.431E-04	0.0015
Tc-99	6.170E-06	0.0001	2.012E-08	0.0000	0.000E+00	0.0000	2.141E-03	0.0228	1.248E-07	0.0000	3.393E-06	0.0000	4.929E-08	0.0000
U-234	1.253E-04	0.0013	3.667E-04	0.0039	0.000E+00	0.0000	1.931E-04	0.0021	1.611E-06	0.0000	2.607E-06	0.0000	1.101E-05	0.0001
U-235	4.237E-02	0.4515	4.733E-04	0.0050	0.000E+00	0.0000	3.213E-04	0.0034	1.525E-06	0.0000	2.461E-06	0.0000	1.640E-05	0.0002
U-238	7.898E-03	0.0842	3.262E-04	0.0035	0.000E+00	0.0000	1.797E-04	0.0019	1.525E-06	0.0000	2.467E-06	0.0000	1.037E-05	0.0001
Total	7.685E-02	0.8189	5.136E-03	0.0547	0.000E+00	0.0000	1.133E-02	0.1208	1.965E-05	0.0002	1.148E-05	0.0001	4.943E-04	0.0053

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.131E-03	0.0334
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.206E-02	0.3417
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.123E-03	0.0226
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.067E-03	0.0220
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.150E-03	0.0229
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.004E-04	0.0075
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.319E-02	0.4602
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.418E-03	0.0897
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.384E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m²

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Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.676E-04	0.0105	2.696E-04	0.0050	0.000E+00	0.0000	1.451E-04	0.0027	1.641E-07	0.0000	2.328E-08	0.0000	3.086E-05	0.0006
Np-237	2.557E-03	0.0473	6.523E-05	0.0012	0.000E+00	0.0000	6.923E-04	0.0128	1.169E-06	0.0000	4.120E-08	0.0000	7.413E-06	0.0001
Pu-239	1.663E-05	0.0003	1.188E-03	0.0220	0.000E+00	0.0000	6.408E-04	0.0119	1.447E-06	0.0000	5.103E-08	0.0000	1.368E-04	0.0025
Pu-240	9.242E-06	0.0002	1.100E-03	0.0203	0.000E+00	0.0000	5.931E-04	0.0110	1.340E-06	0.0000	4.729E-08	0.0000	1.267E-04	0.0023
Tc-99	3.592E-06	0.0001	1.171E-08	0.0000	0.000E+00	0.0000	1.246E-03	0.0231	7.264E-08	0.0000	1.975E-06	0.0000	2.870E-08	0.0000
U-234	9.594E-04	0.0178	2.958E-04	0.0055	0.000E+00	0.0000	1.880E-04	0.0035	1.337E-06	0.0000	2.183E-06	0.0000	9.323E-06	0.0002
U-235	3.523E-02	0.6520	6.837E-04	0.0127	0.000E+00	0.0000	5.596E-04	0.0104	1.230E-06	0.0000	1.969E-06	0.0000	2.667E-05	0.0005
U-238	6.261E-03	0.1159	2.591E-04	0.0048	0.000E+00	0.0000	1.427E-04	0.0026	1.212E-06	0.0000	1.960E-06	0.0000	8.235E-06	0.0002
Total	4.561E-02	0.8440	3.861E-03	0.0714	0.000E+00	0.0000	4.207E-03	0.0779	7.971E-06	0.0001	8.249E-06	0.0002	3.460E-04	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.013E-03	0.0188
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.323E-03	0.0615
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.984E-03	0.0367
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.830E-03	0.0339
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.251E-03	0.0232
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.456E-03	0.0269
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.651E-02	0.6756
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.674E-03	0.1235
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.404E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.105E-04	6.161E-04	6.273E-04	6.658E-04	7.717E-04	1.118E-03	3.127E-03	1.011E-03
Am-241	Np-237+D	1.000E+00	3.212E-09	9.911E-09	2.340E-08	7.130E-08	2.153E-07	8.593E-07	4.025E-06	2.703E-06
Am-241	U-233	1.000E+00	6.034E-17	3.596E-16	1.772E-15	1.596E-14	1.522E-13	2.301E-12	2.811E-11	1.083E-10
Am-241	Th-229+D	1.000E+00	7.048E-20	1.050E-18	1.240E-17	3.488E-16	1.011E-14	6.274E-13	4.177E-11	6.957E-10
Am-241	ΣDSR (j)		6.105E-04	6.161E-04	6.273E-04	6.659E-04	7.720E-04	1.119E-03	3.131E-03	1.013E-03
Np-237+D	Np-237+D	1.000E+00	2.066E-02	2.068E-02	2.071E-02	2.083E-02	2.127E-02	2.430E-02	3.206E-02	3.315E-03
Np-237+D	U-233	1.000E+00	5.055E-10	1.328E-09	2.996E-09	9.261E-09	3.065E-08	1.407E-07	5.766E-07	7.395E-07
Np-237+D	Th-229+D	1.000E+00	8.637E-13	6.031E-12	3.233E-11	3.074E-10	3.080E-09	5.845E-08	1.337E-06	7.654E-06
Np-237+D	ΣDSR (j)		2.066E-02	2.068E-02	2.071E-02	2.083E-02	2.127E-02	2.430E-02	3.206E-02	3.323E-03
Pu-239	Pu-239	1.000E+00	5.927E-04	5.989E-04	6.115E-04	6.553E-04	7.803E-04	1.215E-03	2.123E-03	1.984E-03
Pu-239	U-235+D	1.000E+00	1.440E-12	4.373E-12	1.046E-11	3.415E-11	1.262E-10	9.565E-10	1.294E-08	3.716E-08
Pu-239	Pa-231	1.000E+00	6.160E-17	4.465E-16	2.403E-15	2.198E-14	1.941E-13	2.479E-12	3.290E-11	3.254E-10
Pu-239	Ac-227+D	1.000E+00	4.737E-19	6.585E-18	7.428E-17	1.996E-15	5.352E-14	2.571E-12	1.045E-10	1.194E-09
Pu-239	ΣDSR (j)		5.927E-04	5.989E-04	6.115E-04	6.553E-04	7.803E-04	1.215E-03	2.123E-03	1.984E-03
Pu-240	Pu-240	4.950E-08	2.929E-11	2.960E-11	3.021E-11	3.236E-11	3.847E-11	5.951E-11	1.023E-10	9.058E-11
Pu-240	Pu-240	1.000E+00	5.917E-04	5.979E-04	6.103E-04	6.537E-04	7.771E-04	1.202E-03	2.067E-03	1.830E-03
Pu-240	U-236	1.000E+00	2.364E-12	7.363E-12	1.768E-11	5.691E-11	1.956E-10	9.842E-10	5.034E-09	1.405E-08
Pu-240	Th-232	1.000E+00	1.410E-22	9.115E-22	4.929E-21	5.453E-20	7.366E-19	1.848E-17	3.570E-16	3.523E-15
Pu-240	Ra-228+D	1.000E+00	6.176E-22	9.195E-21	1.033E-19	2.379E-18	4.275E-17	9.938E-16	2.120E-14	2.174E-13
Pu-240	Th-228+D	1.000E+00	7.954E-23	2.274E-21	4.884E-20	2.321E-18	6.192E-17	1.630E-15	3.270E-14	3.398E-13
Pu-240	ΣDSR (j)		5.917E-04	5.979E-04	6.103E-04	6.537E-04	7.771E-04	1.202E-03	2.067E-03	1.830E-03
Tc-99	Tc-99	1.000E+00	2.254E-03	2.254E-03	2.254E-03	2.254E-03	2.255E-03	2.253E-03	2.150E-03	1.251E-03
U-234	U-234	1.000E+00	1.756E-04	1.773E-04	1.809E-04	1.931E-04	2.280E-04	3.469E-04	5.918E-04	4.681E-04
U-234	Th-230	1.000E+00	4.918E-10	1.398E-09	3.422E-09	1.286E-08	5.988E-08	4.573E-07	3.090E-06	9.154E-06
U-234	Ra-226+D	1.000E+00	1.030E-10	7.286E-10	3.904E-09	3.642E-08	3.453E-07	5.672E-06	1.047E-04	9.693E-04
U-234	Pb-210+D	1.000E+00	7.431E-14	7.381E-13	6.228E-12	1.247E-10	2.456E-09	6.004E-08	8.923E-07	9.557E-06
U-234	ΣDSR (j)		1.756E-04	1.773E-04	1.809E-04	1.932E-04	2.284E-04	3.531E-04	7.004E-04	1.456E-03
U-235+D	U-235+D	1.000E+00	2.925E-03	2.960E-03	3.033E-03	3.298E-03	4.187E-03	9.550E-03	4.220E-02	3.345E-02
U-235+D	Pa-231	1.000E+00	1.917E-07	5.898E-07	1.392E-06	4.255E-06	1.291E-05	4.994E-05	2.201E-04	6.390E-04
U-235+D	Ac-227+D	1.000E+00	1.855E-09	1.212E-08	6.240E-08	5.604E-07	4.961E-06	6.452E-05	7.708E-04	2.421E-03
U-235+D	ΣDSR (j)		2.925E-03	2.961E-03	3.034E-03	3.303E-03	4.205E-03	9.664E-03	4.319E-02	3.651E-02
U-238	U-238	5.400E-05	8.527E-09	8.612E-09	8.781E-09	9.373E-09	1.105E-08	1.673E-08	2.792E-08	2.213E-08
U-238+D	U-238+D	9.999E-01	1.475E-03	1.487E-03	1.510E-03	1.595E-03	1.859E-03	3.134E-03	8.418E-03	6.672E-03
U-238+D	U-234	9.999E-01	2.493E-10	7.545E-10	1.795E-09	5.749E-09	1.971E-08	9.885E-08	5.043E-07	1.329E-06
U-238+D	Th-230	9.999E-01	5.030E-16	3.234E-15	1.746E-14	1.925E-13	2.588E-12	6.480E-11	1.295E-09	1.229E-08
U-238+D	Ra-226+D	9.999E-01	7.282E-17	1.105E-15	1.308E-14	3.617E-13	9.947E-12	5.377E-10	2.956E-08	8.991E-07
U-238+D	Pb-210+D	9.999E-01	4.793E-20	9.829E-19	1.741E-17	9.880E-16	5.639E-14	4.804E-12	2.311E-10	8.607E-09
U-238+D	ΣDSR (j)		1.475E-03	1.487E-03	1.510E-03	1.595E-03	1.859E-03	3.134E-03	8.418E-03	6.674E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		4.095E+04	4.057E+04	3.985E+04	3.754E+04	3.239E+04	2.235E+04	7.984E+03	2.467E+04
Np-237		1.210E+03	1.209E+03	1.207E+03	1.200E+03	1.175E+03	1.029E+03	7.797E+02	7.522E+03
Pu-239		4.218E+04	4.174E+04	4.089E+04	3.815E+04	3.204E+04	2.058E+04	1.178E+04	1.260E+04
Pu-240		4.225E+04	4.181E+04	4.096E+04	3.824E+04	3.217E+04	2.079E+04	1.209E+04	1.366E+04
Tc-99		1.109E+04	1.109E+04	1.109E+04	1.109E+04	1.109E+04	1.109E+04	1.163E+04	1.998E+04
U-234		1.424E+05	1.410E+05	1.382E+05	1.294E+05	1.095E+05	7.080E+04	3.569E+04	1.717E+04
U-235		8.546E+03	8.443E+03	8.240E+03	7.568E+03	5.945E+03	2.587E+03	5.789E+02	6.848E+02
U-238		1.694E+04	1.681E+04	1.655E+04	1.568E+04	1.345E+04	7.977E+03	2.970E+03	3.746E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 249.6 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	250.0 ± 0.5	3.394E-03	7.367E+03	3.391E-03	7.372E+03
Np-237	1.000E+00	247.9 ± 0.5	3.788E-02	6.600E+02	3.775E-02	6.622E+02
Pu-239	1.000E+00	249.9 ± 0.5	2.133E-03	1.172E+04	2.133E-03	1.172E+04
Pu-240	1.000E+00	249.9 ± 0.5	2.085E-03	1.199E+04	2.085E-03	1.199E+04
Tc-99	1.000E+00	46.17 ± 0.09	2.255E-03	1.109E+04	2.236E-03	1.118E+04
U-234	1.000E+00	1.000E+03	1.456E-03	1.717E+04	6.780E-04	3.687E+04
U-235	1.000E+00	249.9 ± 0.5	4.372E-02	5.718E+02	4.371E-02	5.720E+02
U-238	1.000E+00	247.9 ± 0.5	8.581E-03	2.913E+03	8.561E-03	2.920E+03

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Branch Fraction Indicated										
Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.105E-04	6.161E-04	6.273E-04	6.658E-04	7.717E-04	1.118E-03	3.127E-03	1.011E-03
Np-237	Am-241	1.000E+00	3.212E-09	9.911E-09	2.340E-08	7.130E-08	2.153E-07	8.593E-07	4.025E-06	2.703E-06
Np-237	Np-237	1.000E+00	2.066E-02	2.068E-02	2.071E-02	2.083E-02	2.127E-02	2.430E-02	3.206E-02	3.315E-03
Np-237	ΣDOSE (j)		2.066E-02	2.068E-02	2.071E-02	2.083E-02	2.127E-02	2.430E-02	3.207E-02	3.318E-03
U-233	Am-241	1.000E+00	6.034E-17	3.596E-16	1.772E-15	1.596E-14	1.522E-13	2.301E-12	2.811E-11	1.083E-10
U-233	Np-237	1.000E+00	5.055E-10	1.328E-09	2.996E-09	9.261E-09	3.065E-08	1.407E-07	5.766E-07	7.395E-07
U-233	ΣDOSE (j)		5.055E-10	1.328E-09	2.996E-09	9.261E-09	3.065E-08	1.407E-07	5.766E-07	7.396E-07
Th-229	Am-241	1.000E+00	7.048E-20	1.050E-18	1.240E-17	3.488E-16	1.011E-14	6.274E-13	4.177E-11	6.957E-10
Th-229	Np-237	1.000E+00	8.637E-13	6.031E-12	3.233E-11	3.074E-10	3.080E-09	5.845E-08	1.337E-06	7.654E-06
Th-229	ΣDOSE (j)		8.637E-13	6.031E-12	3.233E-11	3.074E-10	3.080E-09	5.845E-08	1.337E-06	7.655E-06
Pu-239	Pu-239	1.000E+00	5.927E-04	5.989E-04	6.115E-04	6.553E-04	7.803E-04	1.215E-03	2.123E-03	1.984E-03
U-235	Pu-239	1.000E+00	1.440E-12	4.373E-12	1.046E-11	3.415E-11	1.262E-10	9.565E-10	1.294E-08	3.716E-08
U-235	U-235	1.000E+00	2.925E-03	2.960E-03	3.033E-03	3.298E-03	4.187E-03	9.550E-03	4.220E-02	3.345E-02
U-235	ΣDOSE (j)		2.925E-03	2.960E-03	3.033E-03	3.298E-03	4.187E-03	9.550E-03	4.220E-02	3.345E-02
Pa-231	Pu-239	1.000E+00	6.160E-17	4.465E-16	2.403E-15	2.198E-14	1.941E-13	2.479E-12	3.290E-11	3.254E-10
Pa-231	U-235	1.000E+00	1.917E-07	5.898E-07	1.392E-06	4.255E-06	1.291E-05	4.994E-05	2.201E-04	6.390E-04
Pa-231	ΣDOSE (j)		1.917E-07	5.898E-07	1.392E-06	4.255E-06	1.291E-05	4.994E-05	2.201E-04	6.390E-04
Ac-227	Pu-239	1.000E+00	4.737E-19	6.585E-18	7.428E-17	1.996E-15	5.352E-14	2.571E-12	1.045E-10	1.194E-09
Ac-227	U-235	1.000E+00	1.855E-09	1.212E-08	6.240E-08	5.604E-07	4.961E-06	6.452E-05	7.708E-04	2.421E-03
Ac-227	ΣDOSE (j)		1.855E-09	1.212E-08	6.240E-08	5.604E-07	4.961E-06	6.452E-05	7.708E-04	2.421E-03
Pu-240	Pu-240	4.950E-08	2.929E-11	2.960E-11	3.021E-11	3.236E-11	3.847E-11	5.951E-11	1.023E-10	9.058E-11
Pu-240	Pu-240	1.000E+00	5.917E-04	5.979E-04	6.103E-04	6.537E-04	7.771E-04	1.202E-03	2.067E-03	1.830E-03
Pu-240	ΣDOSE (j)		5.917E-04	5.979E-04	6.103E-04	6.537E-04	7.771E-04	1.202E-03	2.067E-03	1.830E-03
U-236	Pu-240	1.000E+00	2.364E-12	7.363E-12	1.768E-11	5.691E-11	1.956E-10	9.842E-10	5.034E-09	1.405E-08
Th-232	Pu-240	1.000E+00	1.410E-22	9.115E-22	4.929E-21	5.453E-20	7.366E-19	1.848E-17	3.570E-16	3.523E-15
Ra-228	Pu-240	1.000E+00	6.176E-22	9.195E-21	1.033E-19	2.379E-18	4.275E-17	9.938E-16	2.120E-14	2.174E-13
Th-228	Pu-240	1.000E+00	7.954E-23	2.274E-21	4.884E-20	2.321E-18	6.192E-17	1.630E-15	3.270E-14	3.398E-13
Tc-99	Tc-99	1.000E+00	2.254E-03	2.254E-03	2.254E-03	2.254E-03	2.255E-03	2.253E-03	2.150E-03	1.251E-03
U-234	U-234	1.000E+00	1.756E-04	1.773E-04	1.809E-04	1.931E-04	2.280E-04	3.469E-04	5.918E-04	4.681E-04
U-234	U-238	9.999E-01	2.493E-10	7.545E-10	1.795E-09	5.749E-09	1.971E-08	9.885E-08	5.043E-07	1.329E-06
U-234	ΣDOSE (j)		1.756E-04	1.773E-04	1.809E-04	1.931E-04	2.280E-04	3.470E-04	5.923E-04	4.694E-04
Th-230	U-234	1.000E+00	4.918E-10	1.398E-09	3.422E-09	1.286E-08	5.988E-08	4.573E-07	3.090E-06	9.154E-06
Th-230	U-238	9.999E-01	5.030E-16	3.234E-15	1.746E-14	1.925E-13	2.588E-12	6.480E-11	1.295E-09	1.229E-08
Th-230	ΣDOSE (j)		4.918E-10	1.398E-09	3.422E-09	1.286E-08	5.988E-08	4.573E-07	3.092E-06	9.167E-06

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.030E-10	7.286E-10	3.904E-09	3.642E-08	3.453E-07	5.672E-06	1.047E-04	9.693E-04
Ra-226	U-238	9.999E-01	7.282E-17	1.105E-15	1.308E-14	3.617E-13	9.947E-12	5.377E-10	2.956E-08	8.991E-07
Ra-226	ΣDOSE(j)		1.030E-10	7.286E-10	3.904E-09	3.642E-08	3.453E-07	5.673E-06	1.047E-04	9.702E-04
Pb-210	U-234	1.000E+00	7.431E-14	7.381E-13	6.228E-12	1.247E-10	2.456E-09	6.004E-08	8.923E-07	9.557E-06
Pb-210	U-238	9.999E-01	4.793E-20	9.829E-19	1.741E-17	9.880E-16	5.639E-14	4.804E-12	2.311E-10	8.607E-09
Pb-210	ΣDOSE(j)		7.431E-14	7.381E-13	6.228E-12	1.247E-10	2.456E-09	6.004E-08	8.925E-07	9.565E-06
U-238	U-238	5.400E-05	8.527E-09	8.612E-09	8.781E-09	9.373E-09	1.105E-08	1.673E-08	2.792E-08	2.213E-08
U-238	U-238	9.999E-01	1.475E-03	1.487E-03	1.510E-03	1.595E-03	1.859E-03	3.134E-03	8.418E-03	6.672E-03
U-238	ΣDOSE(j)		1.475E-03	1.487E-03	1.510E-03	1.595E-03	1.859E-03	3.134E-03	8.418E-03	6.672E-03

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 3 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.20 seconds

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Am-241	1.000E+00
Thickness:	1.35 meters	Np-237	1.000E+00
Cover Depth:	0.15 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr							
Basic Radiation Dose Limit = 2.500E+01 mrem/yr							
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)							
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	2.134E-01	2.133E-01	2.131E-01	2.126E-01	2.119E-01	2.223E-01	3.404E-01
M(t):	8.535E-03	8.531E-03	8.524E-03	8.503E-03	8.476E-03	8.892E-03	1.362E-02
							7.141E-03
Maximum TDOSE(t): 3.684E-01 mrem/yr at t = 249.5 ± 0.5 years							

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.495E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Am-241	5.056E-03	0.0137	1.170E-03	0.0032	0.000E+00	0.0000	4.859E-03	0.0132	5.487E-06	0.0000	7.802E-07	0.0000	1.035E-03	0.0028
Np-237	8.148E-02	0.2211	9.477E-04	0.0026	0.000E+00	0.0000	7.885E-02	0.2140	1.329E-04	0.0004	4.371E-06	0.0000	8.413E-04	0.0023
Pu-239	4.849E-05	0.0001	1.651E-03	0.0045	0.000E+00	0.0000	6.893E-03	0.0187	1.555E-05	0.0000	5.484E-07	0.0000	1.471E-03	0.0040
Pu-240	2.504E-05	0.0001	1.620E-03	0.0044	0.000E+00	0.0000	6.761E-03	0.0184	1.526E-05	0.0000	5.381E-07	0.0000	1.443E-03	0.0039
Tc-99	1.761E-05	0.0000	2.705E-08	0.0000	0.000E+00	0.0000	2.226E-02	0.0604	1.297E-06	0.0000	3.528E-05	0.0001	5.123E-07	0.0000
U-234	2.694E-04	0.0007	4.816E-04	0.0013	0.000E+00	0.0000	1.951E-03	0.0053	1.635E-05	0.0000	2.646E-05	0.0001	1.116E-04	0.0003
U-235	1.200E-01	0.3256	5.889E-04	0.0016	0.000E+00	0.0000	3.012E-03	0.0082	1.548E-05	0.0000	2.499E-05	0.0001	1.552E-04	0.0004
U-238	2.278E-02	0.0618	4.288E-04	0.0012	0.000E+00	0.0000	1.827E-03	0.0050	1.550E-05	0.0000	2.507E-05	0.0001	1.053E-04	0.0003
Total	2.296E-01	0.6233	6.888E-03	0.0187	0.000E+00	0.0000	1.264E-01	0.3431	2.179E-04	0.0006	1.180E-04	0.0003	5.162E-03	0.0140

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.495E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.213E-02	0.0329
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.623E-01	0.4404
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.008E-02	0.0274
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.864E-03	0.0268
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.231E-02	0.0606
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.856E-03	0.0078
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.238E-01	0.3359
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.518E-02	0.0684
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.684E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.351E-06	0.0000	3.501E-06	0.0000	0.000E+00	0.0000	6.049E-03	0.0283	1.917E-07	0.0000	2.135E-08	0.0000	3.097E-06	0.0000
Np-237	1.207E-02	0.0566	4.253E-06	0.0000	0.000E+00	0.0000	1.476E-01	0.6917	8.693E-05	0.0004	2.341E-06	0.0000	3.777E-06	0.0000
Pu-239	1.944E-06	0.0000	3.386E-06	0.0000	0.000E+00	0.0000	5.887E-03	0.0276	3.732E-07	0.0000	1.029E-08	0.0000	3.015E-06	0.0000
Pu-240	4.433E-08	0.0000	3.386E-06	0.0000	0.000E+00	0.0000	5.887E-03	0.0276	3.732E-07	0.0000	1.029E-08	0.0000	3.015E-06	0.0000
Tc-99	1.195E-07	0.0000	6.563E-11	0.0000	0.000E+00	0.0000	2.250E-02	0.1055	1.306E-06	0.0000	3.548E-05	0.0002	1.243E-09	0.0000
U-234	5.407E-07	0.0000	1.042E-06	0.0000	0.000E+00	0.0000	1.741E-03	0.0082	1.356E-06	0.0000	1.700E-06	0.0000	2.410E-07	0.0000
U-235	5.217E-03	0.0244	9.707E-07	0.0000	0.000E+00	0.0000	1.647E-03	0.0077	1.281E-06	0.0000	1.606E-06	0.0000	2.278E-07	0.0000
U-238	2.957E-03	0.0139	9.314E-07	0.0000	0.000E+00	0.0000	1.653E-03	0.0077	1.288E-06	0.0000	1.614E-06	0.0000	2.288E-07	0.0000
Total	2.025E-02	0.0949	1.747E-05	0.0001	0.000E+00	0.0000	1.929E-01	0.9043	9.310E-05	0.0004	4.278E-05	0.0002	1.360E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.059E-03	0.0284
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.598E-01	0.7487
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.896E-03	0.0276
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.894E-03	0.0276
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-02	0.1056
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.746E-03	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.868E-03	0.0322
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.614E-03	0.0216
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.134E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.457E-06	0.0000	1.049E-05	0.0000	0.000E+00	0.0000	6.044E-03	0.0283	2.233E-07	0.0000	2.590E-08	0.0000	9.278E-06	0.0000
Np-237	1.217E-02	0.0571	1.272E-05	0.0001	0.000E+00	0.0000	1.472E-01	0.6903	8.749E-05	0.0004	2.363E-06	0.0000	1.130E-05	0.0001
Pu-239	1.970E-06	0.0000	1.016E-05	0.0000	0.000E+00	0.0000	5.891E-03	0.0276	4.352E-07	0.0000	1.250E-08	0.0000	9.044E-06	0.0000
Pu-240	4.531E-08	0.0000	1.016E-05	0.0000	0.000E+00	0.0000	5.891E-03	0.0276	4.352E-07	0.0000	1.249E-08	0.0000	9.043E-06	0.0000
Tc-99	1.220E-07	0.0000	1.968E-10	0.0000	0.000E+00	0.0000	2.250E-02	0.1055	1.306E-06	0.0000	3.548E-05	0.0002	3.726E-09	0.0000
U-234	5.525E-07	0.0000	3.124E-06	0.0000	0.000E+00	0.0000	1.742E-03	0.0082	1.421E-06	0.0000	1.808E-06	0.0000	7.228E-07	0.0000
U-235	5.287E-03	0.0248	2.912E-06	0.0000	0.000E+00	0.0000	1.651E-03	0.0077	1.343E-06	0.0000	1.708E-06	0.0000	6.837E-07	0.0000
U-238	2.982E-03	0.0140	2.793E-06	0.0000	0.000E+00	0.0000	1.654E-03	0.0078	1.350E-06	0.0000	1.716E-06	0.0000	6.863E-07	0.0000
Total	2.045E-02	0.0959	5.235E-05	0.0002	0.000E+00	0.0000	1.926E-01	0.9030	9.401E-05	0.0004	4.313E-05	0.0002	4.076E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.068E-03	0.0284
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.595E-01	0.7479
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.913E-03	0.0277
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.910E-03	0.0277
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-02	0.1057
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.750E-03	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.945E-03	0.0326
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.642E-03	0.0218
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.133E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.680E-06	0.0000	2.439E-05	0.0001	0.000E+00	0.0000	6.034E-03	0.0283	2.864E-07	0.0000	3.496E-08	0.0000	2.158E-05	0.0001
Np-237	1.238E-02	0.0581	2.950E-05	0.0001	0.000E+00	0.0000	1.465E-01	0.6875	8.861E-05	0.0004	2.407E-06	0.0000	2.619E-05	0.0001
Pu-239	2.023E-06	0.0000	2.369E-05	0.0001	0.000E+00	0.0000	5.900E-03	0.0277	5.599E-07	0.0000	1.692E-08	0.0000	2.110E-05	0.0001
Pu-240	4.732E-08	0.0000	2.369E-05	0.0001	0.000E+00	0.0000	5.898E-03	0.0277	5.598E-07	0.0000	1.691E-08	0.0000	2.109E-05	0.0001
Tc-99	1.271E-07	0.0000	4.584E-10	0.0000	0.000E+00	0.0000	2.250E-02	0.1056	1.307E-06	0.0000	3.548E-05	0.0002	8.681E-09	0.0000
U-234	5.809E-07	0.0000	7.285E-06	0.0000	0.000E+00	0.0000	1.744E-03	0.0082	1.551E-06	0.0000	2.023E-06	0.0000	1.685E-06	0.0000
U-235	5.431E-03	0.0255	6.794E-06	0.0000	0.000E+00	0.0000	1.660E-03	0.0078	1.466E-06	0.0000	1.911E-06	0.0000	1.597E-06	0.0000
U-238	3.032E-03	0.0142	6.514E-06	0.0000	0.000E+00	0.0000	1.656E-03	0.0078	1.473E-06	0.0000	1.920E-06	0.0000	1.600E-06	0.0000
Total	2.085E-02	0.0978	1.219E-04	0.0006	0.000E+00	0.0000	1.919E-01	0.9005	9.581E-05	0.0004	4.381E-05	0.0002	9.486E-05	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.084E-03	0.0286
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.590E-01	0.7463
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.947E-03	0.0279
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.943E-03	0.0279
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-02	0.1058
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.757E-03	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.103E-03	0.0333
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.699E-03	0.0220
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.131E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.571E-06	0.0000	7.235E-05	0.0003	0.000E+00	0.0000	6.000E-03	0.0282	5.042E-07	0.0000	6.619E-08	0.0000	6.401E-05	0.0003
Np-237	1.312E-02	0.0617	8.651E-05	0.0004	0.000E+00	0.0000	1.440E-01	0.6775	9.237E-05	0.0004	2.555E-06	0.0000	7.682E-05	0.0004
Pu-239	2.218E-06	0.0000	7.103E-05	0.0003	0.000E+00	0.0000	5.929E-03	0.0279	9.959E-07	0.0000	3.237E-08	0.0000	6.326E-05	0.0003
Pu-240	5.508E-08	0.0000	7.097E-05	0.0003	0.000E+00	0.0000	5.924E-03	0.0279	9.951E-07	0.0000	3.235E-08	0.0000	6.320E-05	0.0003
Tc-99	1.466E-07	0.0000	1.368E-09	0.0000	0.000E+00	0.0000	2.251E-02	0.1059	1.307E-06	0.0000	3.549E-05	0.0002	2.590E-08	0.0000
U-234	7.334E-07	0.0000	2.181E-05	0.0001	0.000E+00	0.0000	1.749E-03	0.0082	2.006E-06	0.0000	2.772E-06	0.0000	5.045E-06	0.0000
U-235	5.965E-03	0.0281	2.040E-05	0.0001	0.000E+00	0.0000	1.693E-03	0.0080	1.895E-06	0.0000	2.619E-06	0.0000	4.816E-06	0.0000
U-238	3.214E-03	0.0151	1.950E-05	0.0001	0.000E+00	0.0000	1.661E-03	0.0078	1.904E-06	0.0000	2.632E-06	0.0000	4.790E-06	0.0000
Total	2.231E-02	0.1050	3.626E-04	0.0017	0.000E+00	0.0000	1.895E-01	0.8913	1.020E-04	0.0005	4.620E-05	0.0002	2.820E-04	0.0013

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.142E-03	0.0289
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.574E-01	0.7404
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.066E-03	0.0285
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.059E-03	0.0285
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-02	0.1060
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.782E-03	0.0084
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.688E-03	0.0362
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.903E-03	0.0231
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.425E-06	0.0000	2.035E-04	0.0010	0.000E+00	0.0000	5.903E-03	0.0279	1.100E-06	0.0000	1.516E-07	0.0000	1.800E-04	0.0008
Np-237	1.551E-02	0.0732	2.355E-04	0.0011	0.000E+00	0.0000	1.371E-01	0.6471	1.020E-04	0.0005	2.935E-06	0.0000	2.091E-04	0.0010
Pu-239	2.887E-06	0.0000	2.059E-04	0.0010	0.000E+00	0.0000	6.011E-03	0.0284	2.238E-06	0.0000	7.642E-08	0.0000	1.834E-04	0.0009
Pu-240	8.502E-08	0.0000	2.054E-04	0.0010	0.000E+00	0.0000	5.997E-03	0.0283	2.233E-06	0.0000	7.625E-08	0.0000	1.830E-04	0.0009
Tc-99	2.204E-07	0.0000	3.912E-09	0.0000	0.000E+00	0.0000	2.251E-02	0.1062	1.308E-06	0.0000	3.552E-05	0.0002	7.409E-08	0.0000
U-234	1.723E-06	0.0000	6.295E-05	0.0003	0.000E+00	0.0000	1.766E-03	0.0083	3.292E-06	0.0000	4.895E-06	0.0000	1.456E-05	0.0001
U-235	7.805E-03	0.0368	5.977E-05	0.0003	0.000E+00	0.0000	1.789E-03	0.0084	3.111E-06	0.0000	4.626E-06	0.0000	1.428E-05	0.0001
U-238	3.797E-03	0.0179	5.626E-05	0.0003	0.000E+00	0.0000	1.676E-03	0.0079	3.126E-06	0.0000	4.648E-06	0.0000	1.382E-05	0.0001
Total	2.713E-02	0.1280	1.029E-03	0.0049	0.000E+00	0.0000	1.828E-01	0.8625	1.184E-04	0.0006	5.293E-05	0.0002	7.983E-04	0.0038

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.296E-03	0.0297
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.532E-01	0.7229
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.405E-03	0.0302
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.388E-03	0.0301
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.255E-02	0.1064
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.853E-03	0.0087
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.676E-03	0.0457
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.551E-03	0.0262
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.119E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 30 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.910E-05	0.0003	5.989E-04	0.0027	0.000E+00	0.0000	5.563E-03	0.0250	2.895E-06	0.0000	4.090E-07	0.0000	5.299E-04	0.0024
Np-237	2.793E-02	0.1256	6.186E-04	0.0028	0.000E+00	0.0000	1.153E-01	0.5185	1.242E-04	0.0006	3.851E-06	0.0000	5.493E-04	0.0025
Pu-239	7.267E-06	0.0000	6.740E-04	0.0030	0.000E+00	0.0000	6.297E-03	0.0283	6.549E-06	0.0000	2.293E-07	0.0000	6.002E-04	0.0027
Pu-240	3.885E-07	0.0000	6.688E-04	0.0030	0.000E+00	0.0000	6.248E-03	0.0281	6.499E-06	0.0000	2.275E-07	0.0000	5.955E-04	0.0027
Tc-99	9.189E-07	0.0000	1.221E-08	0.0000	0.000E+00	0.0000	2.249E-02	0.1012	1.308E-06	0.0000	3.555E-05	0.0002	2.313E-07	0.0000
U-234	1.719E-05	0.0001	2.029E-04	0.0009	0.000E+00	0.0000	1.823E-03	0.0082	7.662E-06	0.0000	1.211E-05	0.0001	4.695E-05	0.0002
U-235	2.005E-02	0.0902	2.086E-04	0.0009	0.000E+00	0.0000	2.155E-03	0.0097	7.247E-06	0.0000	1.145E-05	0.0001	5.176E-05	0.0002
U-238	6.856E-03	0.0308	1.812E-04	0.0008	0.000E+00	0.0000	1.728E-03	0.0078	7.275E-06	0.0000	1.150E-05	0.0001	4.451E-05	0.0002
Total	5.493E-02	0.2471	3.153E-03	0.0142	0.000E+00	0.0000	1.616E-01	0.7268	1.636E-04	0.0007	7.532E-05	0.0003	2.418E-03	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.765E-03	0.0304
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.445E-01	0.6499
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.585E-03	0.0341
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.520E-03	0.0338
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.253E-02	0.1014
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.110E-03	0.0095
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.248E-02	0.1011
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.828E-03	0.0397
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.223E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.684E-03	0.0138	1.079E-03	0.0032	0.000E+00	0.0000	4.480E-03	0.0132	5.063E-06	0.0000	7.196E-07	0.0000	9.547E-04	0.0028
Np-237	6.919E-02	0.2032	8.051E-04	0.0024	0.000E+00	0.0000	6.695E-02	0.1966	1.129E-04	0.0003	3.718E-06	0.0000	7.146E-04	0.0021
Pu-239	4.905E-05	0.0001	1.644E-03	0.0048	0.000E+00	0.0000	6.860E-03	0.0202	1.549E-05	0.0000	5.461E-07	0.0000	1.464E-03	0.0043
Pu-240	2.677E-05	0.0001	1.607E-03	0.0047	0.000E+00	0.0000	6.703E-03	0.0197	1.513E-05	0.0000	5.338E-07	0.0000	1.431E-03	0.0042
Tc-99	1.707E-05	0.0001	2.603E-08	0.0000	0.000E+00	0.0000	2.141E-02	0.0629	1.248E-06	0.0000	3.393E-05	0.0001	4.929E-07	0.0000
U-234	3.574E-04	0.0010	4.744E-04	0.0014	0.000E+00	0.0000	1.931E-03	0.0057	1.611E-05	0.0000	2.607E-05	0.0001	1.101E-04	0.0003
U-235	1.185E-01	0.3480	6.123E-04	0.0018	0.000E+00	0.0000	3.213E-03	0.0094	1.525E-05	0.0000	2.461E-05	0.0001	1.640E-04	0.0005
U-238	2.240E-02	0.0658	4.220E-04	0.0012	0.000E+00	0.0000	1.797E-03	0.0053	1.525E-05	0.0000	2.467E-05	0.0001	1.037E-04	0.0003
Total	2.152E-01	0.6321	6.644E-03	0.0195	0.000E+00	0.0000	1.133E-01	0.3329	1.965E-04	0.0006	1.148E-04	0.0003	4.943E-03	0.0145

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.120E-02	0.0329
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.378E-01	0.4047
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.003E-02	0.0295
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.782E-03	0.0287
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.146E-02	0.0630
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.915E-03	0.0086
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.225E-01	0.3599
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.476E-02	0.0727
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.404E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.517E-03	0.0085	3.488E-04	0.0020	0.000E+00	0.0000	1.451E-03	0.0081	1.641E-06	0.0000	2.328E-07	0.0000	3.086E-04	0.0017
Np-237	7.174E-03	0.0402	8.438E-05	0.0005	0.000E+00	0.0000	6.923E-03	0.0388	1.169E-05	0.0001	4.120E-07	0.0000	7.413E-05	0.0004
Pu-239	4.590E-05	0.0003	1.537E-03	0.0086	0.000E+00	0.0000	6.408E-03	0.0359	1.447E-05	0.0001	5.103E-07	0.0000	1.368E-03	0.0077
Pu-240	2.370E-05	0.0001	1.422E-03	0.0080	0.000E+00	0.0000	5.931E-03	0.0332	1.340E-05	0.0001	4.729E-07	0.0000	1.267E-03	0.0071
Tc-99	9.935E-06	0.0001	1.515E-08	0.0000	0.000E+00	0.0000	1.246E-02	0.0698	7.264E-07	0.0000	1.975E-05	0.0001	2.870E-07	0.0000
U-234	2.766E-03	0.0155	3.826E-04	0.0021	0.000E+00	0.0000	1.880E-03	0.0105	1.337E-05	0.0001	2.183E-05	0.0001	9.323E-05	0.0005
U-235	9.854E-02	0.5520	8.844E-04	0.0050	0.000E+00	0.0000	5.596E-03	0.0313	1.230E-05	0.0001	1.969E-05	0.0001	2.667E-04	0.0015
U-238	1.776E-02	0.0995	3.352E-04	0.0019	0.000E+00	0.0000	1.427E-03	0.0080	1.212E-05	0.0001	1.960E-05	0.0001	8.235E-05	0.0005
Total	1.278E-01	0.7161	4.994E-03	0.0280	0.000E+00	0.0000	4.207E-02	0.2357	7.971E-05	0.0004	8.249E-05	0.0005	3.460E-03	0.0194

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.627E-03	0.0203
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.427E-02	0.0799
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.374E-03	0.0525
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.658E-03	0.0485
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.249E-02	0.0700
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.157E-03	0.0289
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.053E-01	0.5899
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.963E-02	0.1100
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.785E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.059E-03	6.067E-03	6.084E-03	6.141E-03	6.294E-03	6.760E-03	1.119E-02	3.615E-03
Am-241	Np-237+D	1.000E+00	2.451E-08	7.610E-08	1.793E-07	5.384E-07	1.550E-06	5.108E-06	1.729E-05	1.161E-05
Am-241	U-233	1.000E+00	5.916E-16	3.493E-15	1.693E-14	1.446E-13	1.213E-12	1.353E-11	1.188E-10	4.573E-10
Am-241	Th-229+D	1.000E+00	1.956E-19	2.804E-18	3.248E-17	8.976E-16	2.541E-14	1.545E-12	1.165E-10	1.941E-09
Am-241	ΣDSR (j)		6.059E-03	6.068E-03	6.084E-03	6.142E-03	6.296E-03	6.765E-03	1.120E-02	3.627E-03
Np-237+D	Np-237+D	1.000E+00	1.598E-01	1.595E-01	1.590E-01	1.574E-01	1.532E-01	1.445E-01	1.378E-01	1.424E-02
Np-237+D	U-233	1.000E+00	4.949E-09	1.288E-08	2.858E-08	8.383E-08	2.441E-07	8.269E-07	2.436E-06	3.124E-06
Np-237+D	Th-229+D	1.000E+00	2.353E-12	1.595E-11	8.435E-11	7.901E-10	7.736E-09	1.439E-07	3.729E-06	2.135E-05
Np-237+D	ΣDSR (j)		1.598E-01	1.595E-01	1.590E-01	1.574E-01	1.532E-01	1.445E-01	1.378E-01	1.427E-02
Pu-239	Pu-239	1.000E+00	5.896E-03	5.913E-03	5.947E-03	6.066E-03	6.405E-03	7.585E-03	1.003E-02	9.374E-03
Pu-239	U-235+D	1.000E+00	3.351E-12	1.022E-11	2.441E-11	7.913E-11	2.876E-10	2.193E-09	3.645E-08	1.047E-07
Pu-239	Pa-231	1.000E+00	5.839E-16	4.236E-15	2.276E-14	2.066E-13	1.782E-12	2.085E-11	2.262E-10	2.237E-09
Pu-239	Ac-227+D	1.000E+00	2.093E-18	2.588E-17	2.686E-16	6.645E-15	1.616E-13	6.755E-12	2.900E-10	3.314E-09
Pu-239	ΣDSR (j)		5.896E-03	5.913E-03	5.947E-03	6.066E-03	6.405E-03	7.585E-03	1.003E-02	9.374E-03
Pu-240	Pu-240	4.950E-08	2.917E-10	2.926E-10	2.942E-10	2.999E-10	3.162E-10	3.722E-10	4.842E-10	4.286E-10
Pu-240	Pu-240	1.000E+00	5.894E-03	5.910E-03	5.943E-03	6.059E-03	6.388E-03	7.519E-03	9.782E-03	8.658E-03
Pu-240	U-236	1.000E+00	2.349E-11	7.267E-11	1.718E-10	5.255E-10	1.591E-09	5.953E-09	2.207E-08	6.159E-08
Pu-240	Th-232	1.000E+00	1.378E-21	8.633E-21	4.370E-20	3.976E-19	3.770E-18	5.770E-17	8.244E-16	8.133E-15
Pu-240	Ra-228+D	1.000E+00	2.281E-21	3.465E-20	3.922E-19	8.979E-18	1.568E-16	3.359E-15	6.994E-14	7.174E-13
Pu-240	Th-228+D	1.000E+00	2.023E-22	5.717E-21	1.220E-19	5.794E-18	1.557E-16	4.250E-15	9.530E-14	9.905E-13
Pu-240	ΣDSR (j)		5.894E-03	5.910E-03	5.943E-03	6.059E-03	6.388E-03	7.520E-03	9.782E-03	8.658E-03
Tc-99	Tc-99	1.000E+00	2.254E-02	2.254E-02	2.254E-02	2.254E-02	2.255E-02	2.253E-02	2.146E-02	1.249E-02
U-234	U-234	1.000E+00	1.746E-03	1.750E-03	1.757E-03	1.782E-03	1.852E-03	2.091E-03	2.575E-03	2.036E-03
U-234	Th-230	1.000E+00	4.770E-09	1.312E-08	3.005E-08	9.311E-08	3.057E-07	1.427E-06	7.238E-06	2.144E-05
U-234	Ra-226+D	1.000E+00	3.182E-10	2.276E-09	1.223E-08	1.137E-07	1.063E-06	1.690E-05	3.248E-04	3.008E-03
U-234	Pb-210+D	1.000E+00	7.426E-13	7.372E-12	6.217E-11	1.244E-09	2.446E-08	5.941E-07	8.480E-06	9.081E-05
U-234	ΣDSR (j)		1.746E-03	1.750E-03	1.757E-03	1.782E-03	1.853E-03	2.110E-03	2.915E-03	5.157E-03
U-235+D	U-235+D	1.000E+00	6.866E-03	6.939E-03	7.089E-03	7.646E-03	9.542E-03	2.189E-02	1.189E-01	9.421E-02
U-235+D	Pa-231	1.000E+00	1.820E-06	5.599E-06	1.319E-05	3.999E-05	1.186E-04	4.200E-04	1.514E-03	4.394E-03
U-235+D	Ac-227+D	1.000E+00	7.834E-09	4.586E-08	2.206E-07	1.850E-06	1.494E-05	1.694E-04	2.140E-03	6.720E-03
U-235+D	ΣDSR (j)		6.868E-03	6.945E-03	7.103E-03	7.688E-03	9.676E-03	2.248E-02	1.225E-01	1.053E-01
U-238	U-238	5.400E-05	8.493E-08	8.510E-08	8.545E-08	8.665E-08	9.004E-08	1.015E-07	1.231E-07	9.754E-08
U-238+D	U-238+D	9.999E-01	4.614E-03	4.642E-03	4.699E-03	4.903E-03	5.551E-03	8.828E-03	2.476E-02	1.963E-02
U-238+D	U-234	9.999E-01	2.476E-09	7.441E-09	1.743E-08	5.303E-08	1.601E-07	5.959E-07	2.194E-06	5.784E-06
U-238+D	Th-230	9.999E-01	4.877E-15	3.038E-14	1.536E-13	1.397E-12	1.323E-11	2.024E-10	3.034E-09	2.878E-08
U-238+D	Ra-226+D	9.999E-01	2.235E-16	3.437E-15	4.090E-14	1.129E-12	3.061E-11	1.602E-09	9.173E-08	2.790E-06
U-238+D	Pb-210+D	9.999E-01	4.790E-19	9.819E-18	1.739E-16	9.856E-15	5.615E-13	4.753E-11	2.196E-09	8.178E-08
U-238+D	ΣDSR (j)		4.614E-03	4.642E-03	4.699E-03	4.903E-03	5.551E-03	8.828E-03	2.476E-02	1.963E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Root CSM - AF 30 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		4.126E+03	4.120E+03	4.109E+03	4.071E+03	3.971E+03	3.696E+03	2.231E+03	6.893E+03
Np-237		1.565E+02	1.567E+02	1.572E+02	1.588E+02	1.632E+02	1.730E+02	1.815E+02	1.752E+03
Pu-239		4.240E+03	4.228E+03	4.204E+03	4.121E+03	3.903E+03	3.296E+03	2.492E+03	2.667E+03
Pu-240		4.242E+03	4.230E+03	4.206E+03	4.126E+03	3.914E+03	3.325E+03	2.556E+03	2.888E+03
Tc-99		1.109E+03	1.109E+03	1.109E+03	1.109E+03	1.109E+03	1.110E+03	1.165E+03	2.002E+03
U-234		1.432E+04	1.429E+04	1.423E+04	1.403E+04	1.349E+04	1.185E+04	8.575E+03	4.848E+03
U-235		3.640E+03	3.600E+03	3.520E+03	3.252E+03	2.584E+03	1.112E+03	2.041E+02	2.374E+02
U-238		5.418E+03	5.385E+03	5.320E+03	5.098E+03	4.504E+03	2.832E+03	1.010E+03	1.273E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 249.5 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	250.0 ± 0.5	1.214E-02	2.059E+03	1.213E-02	2.061E+03
Np-237	1.000E+00	247.9 ± 0.5	1.628E-01	1.536E+02	1.623E-01	1.541E+02
Pu-239	1.000E+00	249.9 ± 0.5	1.008E-02	2.480E+03	1.008E-02	2.480E+03
Pu-240	1.000E+00	249.9 ± 0.5	9.868E-03	2.534E+03	9.864E-03	2.534E+03
Tc-99	1.000E+00	44.07 ± 0.09	2.255E-02	1.109E+03	2.231E-02	1.121E+03
U-234	1.000E+00	1.000E+03	5.157E-03	4.848E+03	2.856E-03	8.752E+03
U-235	1.000E+00	249.9 ± 0.5	1.239E-01	2.018E+02	1.238E-01	2.020E+02
U-238	1.000E+00	248.2 ± 0.5	2.524E-02	9.906E+02	2.518E-02	9.927E+02

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.059E-03	6.067E-03	6.084E-03	6.141E-03	6.294E-03	6.760E-03	1.119E-02	3.615E-03
Np-237	Am-241	1.000E+00	2.451E-08	7.610E-08	1.793E-07	5.384E-07	1.550E-06	5.108E-06	1.729E-05	1.161E-05
Np-237	Np-237	1.000E+00	1.598E-01	1.595E-01	1.590E-01	1.574E-01	1.532E-01	1.445E-01	1.378E-01	1.424E-02
Np-237	ΣDOSE (j)		1.598E-01	1.595E-01	1.590E-01	1.574E-01	1.532E-01	1.445E-01	1.378E-01	1.425E-02
U-233	Am-241	1.000E+00	5.916E-16	3.493E-15	1.693E-14	1.446E-13	1.213E-12	1.353E-11	1.188E-10	4.573E-10
U-233	Np-237	1.000E+00	4.949E-09	1.288E-08	2.858E-08	8.383E-08	2.441E-07	8.269E-07	2.436E-06	3.124E-06
U-233	ΣDOSE (j)		4.949E-09	1.288E-08	2.858E-08	8.383E-08	2.441E-07	8.270E-07	2.436E-06	3.125E-06
Th-229	Am-241	1.000E+00	1.956E-19	2.804E-18	3.248E-17	8.976E-16	2.541E-14	1.545E-12	1.165E-10	1.941E-09
Th-229	Np-237	1.000E+00	2.353E-12	1.595E-11	8.435E-11	7.901E-10	7.736E-09	1.439E-07	3.729E-06	2.135E-05
Th-229	ΣDOSE (j)		2.353E-12	1.595E-11	8.435E-11	7.901E-10	7.736E-09	1.439E-07	3.729E-06	2.136E-05
Pu-239	Pu-239	1.000E+00	5.896E-03	5.913E-03	5.947E-03	6.066E-03	6.405E-03	7.585E-03	1.003E-02	9.374E-03
U-235	Pu-239	1.000E+00	3.351E-12	1.022E-11	2.441E-11	7.913E-11	2.876E-10	2.193E-09	3.645E-08	1.047E-07
U-235	U-235	1.000E+00	6.866E-03	6.939E-03	7.089E-03	7.646E-03	9.542E-03	2.189E-02	1.189E-01	9.421E-02
U-235	ΣDOSE (j)		6.866E-03	6.939E-03	7.089E-03	7.646E-03	9.542E-03	2.189E-02	1.189E-01	9.421E-02
Pa-231	Pu-239	1.000E+00	5.839E-16	4.236E-15	2.276E-14	2.066E-13	1.782E-12	2.085E-11	2.262E-10	2.237E-09
Pa-231	U-235	1.000E+00	1.820E-06	5.599E-06	1.319E-05	3.999E-05	1.186E-04	4.200E-04	1.514E-03	4.394E-03
Pa-231	ΣDOSE (j)		1.820E-06	5.599E-06	1.319E-05	3.999E-05	1.186E-04	4.200E-04	1.514E-03	4.394E-03
Ac-227	Pu-239	1.000E+00	2.093E-18	2.588E-17	2.686E-16	6.645E-15	1.616E-13	6.755E-12	2.900E-10	3.314E-09
Ac-227	U-235	1.000E+00	7.834E-09	4.586E-08	2.206E-07	1.850E-06	1.494E-05	1.694E-04	2.140E-03	6.720E-03
Ac-227	ΣDOSE (j)		7.834E-09	4.586E-08	2.206E-07	1.850E-06	1.494E-05	1.694E-04	2.140E-03	6.720E-03
Pu-240	Pu-240	4.950E-08	2.917E-10	2.926E-10	2.942E-10	2.999E-10	3.162E-10	3.722E-10	4.842E-10	4.286E-10
Pu-240	Pu-240	1.000E+00	5.894E-03	5.910E-03	5.943E-03	6.059E-03	6.388E-03	7.519E-03	9.782E-03	8.658E-03
Pu-240	ΣDOSE (j)		5.894E-03	5.910E-03	5.943E-03	6.059E-03	6.388E-03	7.519E-03	9.782E-03	8.658E-03
U-236	Pu-240	1.000E+00	2.349E-11	7.267E-11	1.718E-10	5.255E-10	1.591E-09	5.953E-09	2.207E-08	6.159E-08
Th-232	Pu-240	1.000E+00	1.378E-21	8.633E-21	4.370E-20	3.976E-19	3.770E-18	5.770E-17	8.244E-16	8.133E-15
Ra-228	Pu-240	1.000E+00	2.281E-21	3.465E-20	3.922E-19	8.979E-18	1.568E-16	3.359E-15	6.994E-14	7.174E-13
Th-228	Pu-240	1.000E+00	2.023E-22	5.717E-21	1.220E-19	5.794E-18	1.557E-16	4.250E-15	9.530E-14	9.905E-13
Tc-99	Tc-99	1.000E+00	2.254E-02	2.254E-02	2.254E-02	2.254E-02	2.255E-02	2.253E-02	2.146E-02	1.249E-02
U-234	U-234	1.000E+00	1.746E-03	1.750E-03	1.757E-03	1.782E-03	1.852E-03	2.091E-03	2.575E-03	2.036E-03
U-234	U-238	9.999E-01	2.476E-09	7.441E-09	1.743E-08	5.303E-08	1.601E-07	5.959E-07	2.194E-06	5.784E-06
U-234	ΣDOSE (j)		1.746E-03	1.750E-03	1.757E-03	1.782E-03	1.852E-03	2.092E-03	2.577E-03	2.042E-03
Th-230	U-234	1.000E+00	4.770E-09	1.312E-08	3.005E-08	9.311E-08	3.057E-07	1.427E-06	7.238E-06	2.144E-05
Th-230	U-238	9.999E-01	4.877E-15	3.038E-14	1.536E-13	1.397E-12	1.323E-11	2.024E-10	3.034E-09	2.878E-08
Th-230	ΣDOSE (j)		4.770E-09	1.312E-08	3.005E-08	9.311E-08	3.057E-07	1.428E-06	7.241E-06	2.147E-05

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	3.182E-10	2.276E-09	1.223E-08	1.137E-07	1.063E-06	1.690E-05	3.248E-04	3.008E-03
Ra-226	U-238	9.999E-01	2.235E-16	3.437E-15	4.090E-14	1.129E-12	3.061E-11	1.602E-09	9.173E-08	2.790E-06
Ra-226	ΣDOSE(j)		3.182E-10	2.276E-09	1.223E-08	1.137E-07	1.063E-06	1.690E-05	3.249E-04	3.011E-03
Pb-210	U-234	1.000E+00	7.426E-13	7.372E-12	6.217E-11	1.244E-09	2.446E-08	5.941E-07	8.480E-06	9.081E-05
Pb-210	U-238	9.999E-01	4.790E-19	9.819E-18	1.739E-16	9.856E-15	5.615E-13	4.753E-11	2.196E-09	8.178E-08
Pb-210	ΣDOSE(j)		7.426E-13	7.372E-12	6.217E-11	1.244E-09	2.446E-08	5.941E-07	8.482E-06	9.089E-05
U-238	U-238	5.400E-05	8.493E-08	8.510E-08	8.545E-08	8.665E-08	9.004E-08	1.015E-07	1.231E-07	9.754E-08
U-238	U-238	9.999E-01	4.614E-03	4.642E-03	4.699E-03	4.903E-03	5.551E-03	8.828E-03	2.476E-02	1.963E-02
U-238	ΣDOSE(j)		4.614E-03	4.642E-03	4.699E-03	4.903E-03	5.551E-03	8.828E-03	2.476E-02	1.963E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 30 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.15 seconds

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Summary : Hematite - Root CSM - AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Root CSM - AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Root CSM - AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Root CSM - AF 300 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Root CSM - AF 300 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH (9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH (10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH (15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 1.951E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Root CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.351E-06	0.0000	4.513E-06	0.0000	0.000E+00	0.0000	6.049E-02	0.0310	1.917E-06	0.0000	2.135E-07	0.0000	3.097E-05	0.0000
Np-237	1.216E-02	0.0062	5.483E-06	0.0000	0.000E+00	0.0000	1.476E+00	0.7563	8.693E-04	0.0004	2.341E-05	0.0000	3.777E-05	0.0000
Pu-239	1.956E-06	0.0000	4.365E-06	0.0000	0.000E+00	0.0000	5.887E-02	0.0302	3.732E-06	0.0000	1.029E-07	0.0000	3.015E-05	0.0000
Pu-240	4.434E-08	0.0000	4.365E-06	0.0000	0.000E+00	0.0000	5.887E-02	0.0302	3.732E-06	0.0000	1.029E-07	0.0000	3.015E-05	0.0000
Tc-99	1.195E-07	0.0000	8.462E-11	0.0000	0.000E+00	0.0000	2.250E-01	0.1153	1.306E-05	0.0000	3.548E-04	0.0002	1.243E-08	0.0000
U-234	5.408E-07	0.0000	1.343E-06	0.0000	0.000E+00	0.0000	1.741E-02	0.0089	1.356E-05	0.0000	1.700E-05	0.0000	2.410E-06	0.0000
U-235	5.221E-03	0.0027	1.252E-06	0.0000	0.000E+00	0.0000	1.647E-02	0.0084	1.281E-05	0.0000	1.606E-05	0.0000	2.278E-06	0.0000
U-238	3.041E-03	0.0016	1.201E-06	0.0000	0.000E+00	0.0000	1.653E-02	0.0085	1.288E-05	0.0000	1.614E-05	0.0000	2.288E-06	0.0000
Total	2.042E-02	0.0105	2.252E-05	0.0000	0.000E+00	0.0000	1.929E+00	0.9888	9.310E-04	0.0005	4.278E-04	0.0002	1.360E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.053E-02	0.0310
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.489E+00	0.7630
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.891E-02	0.0302
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.891E-02	0.0302
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-01	0.1155
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.745E-02	0.0089
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.172E-02	0.0111
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.961E-02	0.0100
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.951E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 300 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.457E-06	0.0000	1.352E-05	0.0000	0.000E+00	0.0000	6.044E-02	0.0310	2.233E-06	0.0000	2.590E-07	0.0000	9.278E-05	0.0000
Np-237	1.226E-02	0.0063	1.640E-05	0.0000	0.000E+00	0.0000	1.472E+00	0.7556	8.749E-04	0.0004	2.363E-05	0.0000	1.130E-04	0.0001
Pu-239	1.982E-06	0.0000	1.309E-05	0.0000	0.000E+00	0.0000	5.891E-02	0.0302	4.352E-06	0.0000	1.250E-07	0.0000	9.044E-05	0.0000
Pu-240	4.532E-08	0.0000	1.309E-05	0.0000	0.000E+00	0.0000	5.891E-02	0.0302	4.352E-06	0.0000	1.249E-07	0.0000	9.043E-05	0.0000
Tc-99	1.220E-07	0.0000	2.537E-10	0.0000	0.000E+00	0.0000	2.250E-01	0.1155	1.306E-05	0.0000	3.548E-04	0.0002	3.726E-08	0.0000
U-234	5.528E-07	0.0000	4.028E-06	0.0000	0.000E+00	0.0000	1.742E-02	0.0089	1.421E-05	0.0000	1.808E-05	0.0000	7.228E-06	0.0000
U-235	5.293E-03	0.0027	3.755E-06	0.0000	0.000E+00	0.0000	1.651E-02	0.0085	1.343E-05	0.0000	1.708E-05	0.0000	6.837E-06	0.0000
U-238	3.068E-03	0.0016	3.602E-06	0.0000	0.000E+00	0.0000	1.654E-02	0.0085	1.350E-05	0.0000	1.716E-05	0.0000	6.863E-06	0.0000
Total	2.063E-02	0.0106	6.750E-05	0.0000	0.000E+00	0.0000	1.926E+00	0.9885	9.401E-04	0.0005	4.313E-04	0.0002	4.076E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.055E-02	0.0311
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.486E+00	0.7624
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.902E-02	0.0303
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.901E-02	0.0303
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-01	0.1157
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.746E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.185E-02	0.0112
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.965E-02	0.0101
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.948E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.680E-06	0.0000	3.145E-05	0.0000	0.000E+00	0.0000	6.034E-02	0.0311	2.864E-06	0.0000	3.496E-07	0.0000	2.158E-04	0.0001
Np-237	1.248E-02	0.0064	3.803E-05	0.0000	0.000E+00	0.0000	1.465E+00	0.7542	8.861E-04	0.0005	2.407E-05	0.0000	2.619E-04	0.0001
Pu-239	2.037E-06	0.0000	3.055E-05	0.0000	0.000E+00	0.0000	5.900E-02	0.0304	5.599E-06	0.0000	1.692E-07	0.0000	2.110E-04	0.0001
Pu-240	4.735E-08	0.0000	3.054E-05	0.0000	0.000E+00	0.0000	5.898E-02	0.0304	5.598E-06	0.0000	1.691E-07	0.0000	2.109E-04	0.0001
Tc-99	1.272E-07	0.0000	5.911E-10	0.0000	0.000E+00	0.0000	2.250E-01	0.1158	1.307E-05	0.0000	3.548E-04	0.0002	8.681E-08	0.0000
U-234	5.817E-07	0.0000	9.393E-06	0.0000	0.000E+00	0.0000	1.744E-02	0.0090	1.551E-05	0.0000	2.023E-05	0.0000	1.685E-05	0.0000
U-235	5.441E-03	0.0028	8.760E-06	0.0000	0.000E+00	0.0000	1.660E-02	0.0085	1.466E-05	0.0000	1.911E-05	0.0000	1.597E-05	0.0000
U-238	3.123E-03	0.0016	8.398E-06	0.0000	0.000E+00	0.0000	1.656E-02	0.0085	1.473E-05	0.0000	1.920E-05	0.0000	1.600E-05	0.0000
Total	2.105E-02	0.0108	1.571E-04	0.0001	0.000E+00	0.0000	1.919E+00	0.9879	9.581E-04	0.0005	4.381E-04	0.0002	9.486E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.060E-02	0.0312
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.479E+00	0.7612
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.925E-02	0.0305
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.923E-02	0.0305
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-01	0.1160
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.750E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.210E-02	0.0114
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.974E-02	0.0102
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 300 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.572E-06	0.0000	9.329E-05	0.0000	0.000E+00	0.0000	6.000E-02	0.0312	5.042E-06	0.0000	6.619E-07	0.0000	6.401E-04	0.0003
Np-237	1.328E-02	0.0069	1.115E-04	0.0001	0.000E+00	0.0000	1.440E+00	0.7492	9.237E-04	0.0005	2.555E-05	0.0000	7.682E-04	0.0004
Pu-239	2.240E-06	0.0000	9.158E-05	0.0000	0.000E+00	0.0000	5.929E-02	0.0308	9.959E-06	0.0000	3.237E-07	0.0000	6.326E-04	0.0003
Pu-240	5.521E-08	0.0000	9.151E-05	0.0000	0.000E+00	0.0000	5.924E-02	0.0308	9.951E-06	0.0000	3.235E-07	0.0000	6.320E-04	0.0003
Tc-99	1.469E-07	0.0000	1.764E-09	0.0000	0.000E+00	0.0000	2.251E-01	0.1171	1.307E-05	0.0000	3.549E-04	0.0002	2.590E-07	0.0000
U-234	7.390E-07	0.0000	2.812E-05	0.0000	0.000E+00	0.0000	1.749E-02	0.0091	2.006E-05	0.0000	2.772E-05	0.0000	5.045E-05	0.0000
U-235	5.991E-03	0.0031	2.630E-05	0.0000	0.000E+00	0.0000	1.693E-02	0.0088	1.895E-05	0.0000	2.619E-05	0.0000	4.816E-05	0.0000
U-238	3.324E-03	0.0017	2.514E-05	0.0000	0.000E+00	0.0000	1.661E-02	0.0086	1.904E-05	0.0000	2.632E-05	0.0000	4.790E-05	0.0000
Total	2.260E-02	0.0118	4.675E-04	0.0002	0.000E+00	0.0000	1.895E+00	0.9858	1.020E-03	0.0005	4.620E-04	0.0002	2.820E-03	0.0015

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.075E-02	0.0316
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.455E+00	0.7571
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.002E-02	0.0312
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.997E-02	0.0312
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.254E-01	0.1173
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.762E-02	0.0092
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.304E-02	0.0120
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.005E-02	0.0104
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.922E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.428E-06	0.0000	2.624E-04	0.0001	0.000E+00	0.0000	5.903E-02	0.0316	1.100E-05	0.0000	1.516E-06	0.0000	1.800E-03	0.0010
Np-237	1.584E-02	0.0085	3.037E-04	0.0002	0.000E+00	0.0000	1.371E+00	0.7346	1.020E-03	0.0005	2.935E-05	0.0000	2.091E-03	0.0011
Pu-239	2.941E-06	0.0000	2.655E-04	0.0001	0.000E+00	0.0000	6.011E-02	0.0322	2.238E-05	0.0000	7.642E-07	0.0000	1.834E-03	0.0010
Pu-240	8.561E-08	0.0000	2.649E-04	0.0001	0.000E+00	0.0000	5.997E-02	0.0321	2.233E-05	0.0000	7.625E-07	0.0000	1.830E-03	0.0010
Tc-99	2.219E-07	0.0000	5.044E-09	0.0000	0.000E+00	0.0000	2.251E-01	0.1206	1.308E-05	0.0000	3.552E-04	0.0002	7.409E-07	0.0000
U-234	1.779E-06	0.0000	8.116E-05	0.0000	0.000E+00	0.0000	1.766E-02	0.0095	3.292E-05	0.0000	4.895E-05	0.0000	1.456E-04	0.0001
U-235	7.893E-03	0.0042	7.706E-05	0.0000	0.000E+00	0.0000	1.789E-02	0.0096	3.111E-05	0.0000	4.626E-05	0.0000	1.428E-04	0.0001
U-238	3.972E-03	0.0021	7.254E-05	0.0000	0.000E+00	0.0000	1.676E-02	0.0090	3.126E-05	0.0000	4.648E-05	0.0000	1.382E-04	0.0001
Total	2.772E-02	0.0149	1.327E-03	0.0007	0.000E+00	0.0000	1.828E+00	0.9792	1.184E-03	0.0006	5.293E-04	0.0003	7.983E-03	0.0043

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.111E-02	0.0327
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.390E+00	0.7450
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.224E-02	0.0333
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.209E-02	0.0333
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.255E-01	0.1208
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.797E-02	0.0096
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.608E-02	0.0140
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.102E-02	0.0113
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.866E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.915E-05	0.0000	7.723E-04	0.0005	0.000E+00	0.0000	5.563E-02	0.0326	2.895E-05	0.0000	4.090E-06	0.0000	5.299E-03	0.0031
Np-237	2.946E-02	0.0173	7.976E-04	0.0005	0.000E+00	0.0000	1.153E+00	0.6764	1.242E-03	0.0007	3.851E-05	0.0000	5.493E-03	0.0032
Pu-239	7.616E-06	0.0000	8.690E-04	0.0005	0.000E+00	0.0000	6.297E-02	0.0370	6.549E-05	0.0000	2.293E-06	0.0000	6.002E-03	0.0035
Pu-240	3.974E-07	0.0000	8.623E-04	0.0005	0.000E+00	0.0000	6.248E-02	0.0367	6.499E-05	0.0000	2.275E-06	0.0000	5.955E-03	0.0035
Tc-99	9.401E-07	0.0000	1.575E-08	0.0000	0.000E+00	0.0000	2.249E-01	0.1320	1.308E-05	0.0000	3.555E-04	0.0002	2.313E-06	0.0000
U-234	1.875E-05	0.0000	2.617E-04	0.0002	0.000E+00	0.0000	1.823E-02	0.0107	7.662E-05	0.0000	1.211E-04	0.0001	4.695E-04	0.0003
U-235	2.078E-02	0.0122	2.689E-04	0.0002	0.000E+00	0.0000	2.155E-02	0.0126	7.247E-05	0.0000	1.145E-04	0.0001	5.176E-04	0.0003
U-238	7.466E-03	0.0044	2.336E-04	0.0001	0.000E+00	0.0000	1.728E-02	0.0101	7.275E-05	0.0000	1.150E-04	0.0001	4.451E-04	0.0003
Total	5.780E-02	0.0339	4.065E-03	0.0024	0.000E+00	0.0000	1.616E+00	0.9481	1.636E-03	0.0010	7.532E-04	0.0004	2.418E-02	0.0142

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.181E-02	0.0363
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.190E+00	0.6981
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.991E-02	0.0410
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.937E-02	0.0407
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.253E-01	0.1322
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.918E-02	0.0113
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.330E-02	0.0254
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.561E-02	0.0150
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.704E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.028E-03	0.0041	1.391E-03	0.0009	0.000E+00	0.0000	4.480E-02	0.0303	5.063E-05	0.0000	7.196E-06	0.0000	9.547E-03	0.0065
Np-237	9.100E-02	0.0616	1.038E-03	0.0007	0.000E+00	0.0000	6.695E-01	0.4532	1.129E-03	0.0008	3.718E-05	0.0000	7.146E-03	0.0048
Pu-239	6.386E-05	0.0000	2.120E-03	0.0014	0.000E+00	0.0000	6.860E-02	0.0464	1.549E-04	0.0001	5.461E-06	0.0000	1.464E-02	0.0099
Pu-240	3.296E-05	0.0000	2.072E-03	0.0014	0.000E+00	0.0000	6.703E-02	0.0454	1.513E-04	0.0001	5.338E-06	0.0000	1.431E-02	0.0097
Tc-99	2.232E-05	0.0000	3.356E-08	0.0000	0.000E+00	0.0000	2.141E-01	0.1449	1.248E-05	0.0000	3.393E-04	0.0002	4.929E-06	0.0000
U-234	4.754E-04	0.0003	6.116E-04	0.0004	0.000E+00	0.0000	1.931E-02	0.0131	1.611E-04	0.0001	2.607E-04	0.0002	1.101E-03	0.0007
U-235	1.554E-01	0.1052	7.894E-04	0.0005	0.000E+00	0.0000	3.213E-02	0.0218	1.525E-04	0.0001	2.461E-04	0.0002	1.640E-03	0.0011
U-238	2.971E-02	0.0201	5.441E-04	0.0004	0.000E+00	0.0000	1.797E-02	0.0122	1.525E-04	0.0001	2.467E-04	0.0002	1.037E-03	0.0007
Total	2.828E-01	0.1914	8.566E-03	0.0058	0.000E+00	0.0000	1.133E+00	0.7672	1.965E-03	0.0013	1.148E-03	0.0008	4.943E-02	0.0335

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.183E-02	0.0419
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.698E-01	0.5211
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.559E-02	0.0579
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.359E-02	0.0566
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.144E-01	0.1452
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.192E-02	0.0148
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.904E-01	0.1289
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.966E-02	0.0336
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.477E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.952E-03	0.0031	4.497E-04	0.0007	0.000E+00	0.0000	1.451E-02	0.0230	1.641E-05	0.0000	2.328E-06	0.0000	3.086E-03	0.0049
Np-237	9.436E-03	0.0149	1.088E-04	0.0002	0.000E+00	0.0000	6.923E-02	0.1096	1.169E-04	0.0002	4.120E-06	0.0000	7.413E-04	0.0012
Pu-239	5.976E-05	0.0001	1.981E-03	0.0031	0.000E+00	0.0000	6.408E-02	0.1015	1.447E-04	0.0002	5.103E-06	0.0000	1.368E-02	0.0217
Pu-240	2.918E-05	0.0000	1.834E-03	0.0029	0.000E+00	0.0000	5.932E-02	0.0939	1.340E-04	0.0002	4.729E-06	0.0000	1.267E-02	0.0201
Tc-99	1.299E-05	0.0000	1.954E-08	0.0000	0.000E+00	0.0000	1.246E-01	0.1973	7.264E-06	0.0000	1.975E-04	0.0003	2.870E-06	0.0000
U-234	3.701E-03	0.0059	4.933E-04	0.0008	0.000E+00	0.0000	1.880E-02	0.0298	1.337E-04	0.0002	2.183E-04	0.0003	9.323E-04	0.0015
U-235	1.293E-01	0.2048	1.140E-03	0.0018	0.000E+00	0.0000	5.596E-02	0.0886	1.230E-04	0.0002	1.969E-04	0.0003	2.667E-03	0.0042
U-238	2.355E-02	0.0373	4.322E-04	0.0007	0.000E+00	0.0000	1.427E-02	0.0226	1.212E-04	0.0002	1.960E-04	0.0003	8.235E-04	0.0013
Total	1.680E-01	0.2661	6.439E-03	0.0102	0.000E+00	0.0000	4.207E-01	0.6663	7.971E-04	0.0013	8.249E-04	0.0013	3.460E-02	0.0548

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.001E-02	0.0317
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.964E-02	0.1261
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.995E-02	0.1266
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.398E-02	0.1172
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.248E-01	0.1976
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.428E-02	0.0384
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.894E-01	0.2999
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.940E-02	0.0624
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.314E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.053E-02	6.055E-02	6.060E-02	6.074E-02	6.110E-02	6.177E-02	6.173E-02	1.995E-02
Am-241	Np-237+D	1.000E+00	2.275E-07	7.077E-07	1.666E-06	4.977E-06	1.407E-05	4.206E-05	9.664E-05	6.488E-05
Am-241	U-233	1.000E+00	5.893E-15	3.474E-14	1.680E-13	1.424E-12	1.170E-11	1.221E-10	9.291E-10	3.575E-09
Am-241	Th-229+D	1.000E+00	6.837E-19	8.799E-18	9.627E-17	2.517E-15	6.514E-14	3.073E-12	1.885E-10	3.140E-09
Am-241	ΣDSR (j)		6.053E-02	6.055E-02	6.060E-02	6.075E-02	6.111E-02	6.181E-02	6.183E-02	2.001E-02
Np-237+D	Np-237+D	1.000E+00	1.489E+00	1.486E+00	1.479E+00	1.455E+00	1.390E+00	1.190E+00	7.698E-01	7.958E-02
Np-237+D	U-233	1.000E+00	4.928E-08	1.280E-07	2.835E-07	8.252E-07	2.353E-06	7.461E-06	1.905E-05	2.442E-05
Np-237+D	Th-229+D	1.000E+00	7.816E-12	4.864E-11	2.468E-10	2.206E-09	1.980E-08	2.861E-07	6.033E-06	3.454E-05
Np-237+D	ΣDSR (j)		1.489E+00	1.486E+00	1.479E+00	1.455E+00	1.390E+00	1.190E+00	7.698E-01	7.964E-02
Pu-239	Pu-239	1.000E+00	5.891E-02	5.902E-02	5.925E-02	6.002E-02	6.224E-02	6.991E-02	8.559E-02	7.995E-02
Pu-239	U-235+D	1.000E+00	1.034E-11	3.181E-11	7.538E-11	2.340E-10	7.487E-10	3.876E-09	5.295E-08	1.520E-07
Pu-239	Pa-231	1.000E+00	5.765E-15	4.183E-14	2.247E-13	2.037E-12	1.748E-11	1.999E-10	1.977E-09	1.955E-08
Pu-239	Ac-227+D	1.000E+00	1.473E-17	1.653E-16	1.580E-15	3.575E-14	7.689E-13	2.269E-11	6.104E-10	6.973E-09
Pu-239	ΣDSR (j)		5.891E-02	5.902E-02	5.925E-02	6.002E-02	6.224E-02	6.991E-02	8.559E-02	7.995E-02
Pu-240	Pu-240	4.950E-08	2.916E-09	2.921E-09	2.932E-09	2.969E-09	3.073E-09	3.434E-09	4.138E-09	3.662E-09
Pu-240	Pu-240	1.000E+00	5.891E-02	5.901E-02	5.923E-02	5.997E-02	6.209E-02	6.937E-02	8.359E-02	7.398E-02
Pu-240	U-236	1.000E+00	2.347E-10	7.254E-10	1.712E-09	5.198E-09	1.544E-08	5.448E-08	1.824E-07	5.092E-07
Pu-240	Th-232	1.000E+00	1.373E-20	8.571E-20	4.298E-19	3.785E-18	3.305E-17	4.124E-16	4.660E-15	4.597E-14
Pu-240	Ra-228+D	1.000E+00	1.237E-20	1.927E-19	2.199E-18	4.975E-17	8.228E-16	1.419E-14	2.031E-13	2.083E-12
Pu-240	Th-228+D	1.000E+00	2.846E-22	7.264E-21	1.453E-19	6.629E-18	1.770E-16	4.939E-15	1.300E-13	1.351E-12
Pu-240	ΣDSR (j)		5.891E-02	5.901E-02	5.923E-02	5.997E-02	6.209E-02	6.937E-02	8.359E-02	7.398E-02
Tc-99	Tc-99	1.000E+00	2.254E-01	2.254E-01	2.254E-01	2.254E-01	2.255E-01	2.253E-01	2.144E-01	1.248E-01
U-234	U-234	1.000E+00	1.745E-02	1.746E-02	1.750E-02	1.762E-02	1.796E-02	1.912E-02	2.109E-02	1.668E-02
U-234	Th-230	1.000E+00	4.747E-08	1.299E-07	2.948E-07	8.843E-07	2.674E-06	1.015E-05	3.893E-05	1.153E-04
U-234	Ra-226+D	1.000E+00	1.193E-09	8.751E-09	4.732E-08	4.331E-07	3.810E-06	4.879E-05	7.116E-04	6.590E-03
U-234	Pb-210+D	1.000E+00	7.424E-12	7.370E-11	6.215E-10	1.243E-08	2.444E-07	5.928E-06	8.351E-05	8.942E-04
U-234	ΣDSR (j)		1.745E-02	1.746E-02	1.750E-02	1.762E-02	1.797E-02	1.918E-02	2.192E-02	2.428E-02
U-235+D	U-235+D	1.000E+00	2.170E-02	2.179E-02	2.197E-02	2.263E-02	2.485E-02	3.870E-02	1.727E-01	1.369E-01
U-235+D	Pa-231	1.000E+00	1.797E-05	5.530E-05	1.302E-04	3.943E-04	1.163E-03	4.027E-03	1.323E-02	3.840E-02
U-235+D	Ac-227+D	1.000E+00	5.322E-08	2.821E-07	1.266E-06	9.846E-06	7.076E-05	5.683E-04	4.502E-03	1.414E-02
U-235+D	ΣDSR (j)		2.172E-02	2.185E-02	2.210E-02	2.304E-02	2.608E-02	4.330E-02	1.904E-01	1.894E-01
U-238	U-238	5.400E-05	8.489E-07	8.497E-07	8.514E-07	8.573E-07	8.739E-07	9.301E-07	1.024E-06	8.114E-07
U-238+D	U-238+D	9.999E-01	1.961E-02	1.965E-02	1.974E-02	2.005E-02	2.102E-02	2.560E-02	4.964E-02	3.934E-02
U-238+D	U-234	9.999E-01	2.473E-08	7.426E-08	1.736E-07	5.245E-07	1.553E-06	5.447E-06	1.797E-05	4.737E-05
U-238+D	Th-230	9.999E-01	4.854E-14	3.010E-13	1.508E-12	1.327E-11	1.157E-10	1.439E-09	1.632E-08	1.548E-07
U-238+D	Ra-226+D	9.999E-01	8.246E-16	1.309E-14	1.574E-13	4.293E-12	1.097E-10	4.625E-09	2.010E-07	6.113E-06
U-238+D	Pb-210+D	9.999E-01	4.789E-18	9.817E-17	1.738E-15	9.851E-14	5.610E-12	4.743E-10	2.163E-08	8.053E-07
U-238+D	ΣDSR (j)		1.961E-02	1.965E-02	1.974E-02	2.005E-02	2.102E-02	2.561E-02	4.966E-02	3.940E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Root CSM - AF 300 m²

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Attachment 4 to HEM-11-91

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	4.130E+02	4.129E+02	4.126E+02	4.116E+02	4.091E+02	4.045E+02	4.044E+02	1.249E+03
Np-237	1.679E+01	1.683E+01	1.691E+01	1.718E+01	1.798E+01	2.102E+01	3.248E+01	3.139E+02
Pu-239	4.244E+02	4.236E+02	4.220E+02	4.165E+02	4.017E+02	3.576E+02	2.921E+02	3.127E+02
Pu-240	4.244E+02	4.236E+02	4.221E+02	4.169E+02	4.027E+02	3.604E+02	2.991E+02	3.379E+02
Tc-99	1.109E+02	1.109E+02	1.109E+02	1.109E+02	1.109E+02	1.110E+02	1.166E+02	2.003E+02
U-234	1.433E+03	1.432E+03	1.429E+03	1.419E+03	1.391E+03	1.303E+03	1.140E+03	1.030E+03
U-235	1.151E+03	1.144E+03	1.131E+03	1.085E+03	9.585E+02	5.774E+02	1.313E+02	1.320E+02
U-238	1.275E+03	1.272E+03	1.267E+03	1.247E+03	1.189E+03	9.762E+02	5.034E+02	6.346E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	249.7 ± 0.5	6.702E-02	3.730E+02	6.053E-02	4.130E+02
Np-237	1.000E+00	0.000E+00	1.489E+00	1.679E+01	1.489E+00	1.679E+01
Pu-239	1.000E+00	249.9 ± 0.5	8.600E-02	2.907E+02	5.891E-02	4.244E+02
Pu-240	1.000E+00	250.0 ± 0.5	8.432E-02	2.965E+02	5.891E-02	4.244E+02
Tc-99	1.000E+00	43.92 ± 0.09	2.255E-01	1.109E+02	2.254E-01	1.109E+02
U-234	1.000E+00	1.000E+03	2.428E-02	1.030E+03	1.745E-02	1.433E+03
U-235	1.000E+00	279.0 ± 0.6	1.904E-01	1.313E+02	2.172E-02	1.151E+03
U-238	1.000E+00	249.8 ± 0.5	5.049E-02	4.951E+02	1.961E-02	1.275E+03

Summary : Hematite - Root CSM - AF 300 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	6.053E-02	6.055E-02	6.060E-02	6.074E-02	6.110E-02	6.177E-02	6.173E-02	1.995E-02
Np-237	Am-241	1.000E+00	2.275E-07	7.077E-07	1.666E-06	4.977E-06	1.407E-05	4.206E-05	9.664E-05	6.488E-05
Np-237	Np-237	1.000E+00	1.489E+00	1.486E+00	1.479E+00	1.455E+00	1.390E+00	1.190E+00	7.698E-01	7.958E-02
Np-237	ΣDOSE (j)		1.489E+00	1.486E+00	1.479E+00	1.455E+00	1.390E+00	1.190E+00	7.699E-01	7.964E-02
U-233	Am-241	1.000E+00	5.893E-15	3.474E-14	1.680E-13	1.424E-12	1.170E-11	1.221E-10	9.291E-10	3.575E-09
U-233	Np-237	1.000E+00	4.928E-08	1.280E-07	2.835E-07	8.252E-07	2.353E-06	7.461E-06	1.905E-05	2.442E-05
U-233	ΣDOSE (j)		4.928E-08	1.280E-07	2.835E-07	8.252E-07	2.353E-06	7.461E-06	1.905E-05	2.443E-05
Th-229	Am-241	1.000E+00	6.837E-19	8.799E-18	9.627E-17	2.517E-15	6.514E-14	3.073E-12	1.885E-10	3.140E-09
Th-229	Np-237	1.000E+00	7.816E-12	4.864E-11	2.468E-10	2.206E-09	1.980E-08	2.861E-07	6.033E-06	3.454E-05
Th-229	ΣDOSE (j)		7.816E-12	4.864E-11	2.468E-10	2.206E-09	1.980E-08	2.861E-07	6.033E-06	3.455E-05
Pu-239	Pu-239	1.000E+00	5.891E-02	5.902E-02	5.925E-02	6.002E-02	6.224E-02	6.991E-02	8.559E-02	7.995E-02
U-235	Pu-239	1.000E+00	1.034E-11	3.181E-11	7.538E-11	2.340E-10	7.487E-10	3.876E-09	5.295E-08	1.520E-07
U-235	U-235	1.000E+00	2.170E-02	2.179E-02	2.197E-02	2.263E-02	2.485E-02	3.870E-02	1.727E-01	1.369E-01
U-235	ΣDOSE (j)		2.170E-02	2.179E-02	2.197E-02	2.263E-02	2.485E-02	3.870E-02	1.727E-01	1.369E-01
Pa-231	Pu-239	1.000E+00	5.765E-15	4.183E-14	2.247E-13	2.037E-12	1.748E-11	1.999E-10	1.977E-09	1.955E-08
Pa-231	U-235	1.000E+00	1.797E-05	5.530E-05	1.302E-04	3.943E-04	1.163E-03	4.027E-03	1.323E-02	3.840E-02
Pa-231	ΣDOSE (j)		1.797E-05	5.530E-05	1.302E-04	3.943E-04	1.163E-03	4.027E-03	1.323E-02	3.840E-02
Ac-227	Pu-239	1.000E+00	1.473E-17	1.653E-16	1.580E-15	3.575E-14	7.689E-13	2.269E-11	6.104E-10	6.973E-09
Ac-227	U-235	1.000E+00	5.322E-08	2.821E-07	1.266E-06	9.846E-06	7.076E-05	5.683E-04	4.502E-03	1.414E-02
Ac-227	ΣDOSE (j)		5.322E-08	2.821E-07	1.266E-06	9.846E-06	7.076E-05	5.683E-04	4.502E-03	1.414E-02
Pu-240	Pu-240	4.950E-08	2.916E-09	2.921E-09	2.932E-09	2.969E-09	3.073E-09	3.434E-09	4.138E-09	3.662E-09
Pu-240	Pu-240	1.000E+00	5.891E-02	5.901E-02	5.923E-02	5.997E-02	6.209E-02	6.937E-02	8.359E-02	7.398E-02
Pu-240	ΣDOSE (j)		5.891E-02	5.901E-02	5.923E-02	5.997E-02	6.209E-02	6.937E-02	8.359E-02	7.398E-02
U-236	Pu-240	1.000E+00	2.347E-10	7.254E-10	1.712E-09	5.198E-09	1.544E-08	5.448E-08	1.824E-07	5.092E-07
Th-232	Pu-240	1.000E+00	1.373E-20	8.571E-20	4.298E-19	3.785E-18	3.305E-17	4.124E-16	4.660E-15	4.597E-14
Ra-228	Pu-240	1.000E+00	1.237E-20	1.927E-19	2.199E-18	4.975E-17	8.228E-16	1.419E-14	2.031E-13	2.083E-12
Th-228	Pu-240	1.000E+00	2.846E-22	7.264E-21	1.453E-19	6.629E-18	1.770E-16	4.939E-15	1.300E-13	1.351E-12
Tc-99	Tc-99	1.000E+00	2.254E-01	2.254E-01	2.254E-01	2.254E-01	2.255E-01	2.253E-01	2.144E-01	1.248E-01
U-234	U-234	1.000E+00	1.745E-02	1.746E-02	1.750E-02	1.762E-02	1.796E-02	1.912E-02	2.109E-02	1.668E-02
U-234	U-238	9.999E-01	2.473E-08	7.426E-08	1.736E-07	5.245E-07	1.553E-06	5.447E-06	1.797E-05	4.737E-05
U-234	ΣDOSE (j)		1.745E-02	1.746E-02	1.750E-02	1.762E-02	1.796E-02	1.912E-02	2.111E-02	1.673E-02
Th-230	U-234	1.000E+00	4.747E-08	1.299E-07	2.948E-07	8.843E-07	2.674E-06	1.015E-05	3.893E-05	1.153E-04
Th-230	U-238	9.999E-01	4.854E-14	3.010E-13	1.508E-12	1.327E-11	1.157E-10	1.439E-09	1.632E-08	1.548E-07
Th-230	ΣDOSE (j)		4.747E-08	1.299E-07	2.948E-07	8.843E-07	2.674E-06	1.015E-05	3.895E-05	1.154E-04

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.193E-09	8.751E-09	4.732E-08	4.331E-07	3.810E-06	4.879E-05	7.116E-04	6.590E-03
Ra-226	U-238	9.999E-01	8.246E-16	1.309E-14	1.574E-13	4.293E-12	1.097E-10	4.625E-09	2.010E-07	6.113E-06
Ra-226	ΣDOSE(j)		1.193E-09	8.751E-09	4.732E-08	4.331E-07	3.811E-06	4.880E-05	7.118E-04	6.596E-03
Pb-210	U-234	1.000E+00	7.424E-12	7.370E-11	6.215E-10	1.243E-08	2.444E-07	5.928E-06	8.351E-05	8.942E-04
Pb-210	U-238	9.999E-01	4.789E-18	9.817E-17	1.738E-15	9.851E-14	5.610E-12	4.743E-10	2.163E-08	8.053E-07
Pb-210	ΣDOSE(j)		7.424E-12	7.370E-11	6.215E-10	1.243E-08	2.444E-07	5.928E-06	8.353E-05	8.950E-04
U-238	U-238	5.400E-05	8.489E-07	8.497E-07	8.514E-07	8.573E-07	8.739E-07	9.301E-07	1.024E-06	8.114E-07
U-238	U-238	9.999E-01	1.961E-02	1.965E-02	1.974E-02	2.005E-02	2.102E-02	2.560E-02	4.964E-02	3.934E-02
U-238	ΣDOSE(j)		1.961E-02	1.965E-02	1.974E-02	2.005E-02	2.102E-02	2.560E-02	4.964E-02	3.934E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Root CSM - AF 300 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 300 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.08 seconds

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Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Root CSM - AF 3,000 m^2

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June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.731E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.241E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.811E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.696E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.906E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.541E-05	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Root CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.320E-04	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Root CSM - AF 3,000 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3000.00 square meters	Am-241	1.000E+00
Thickness:	1.35 meters	Np-237	1.000E+00
Cover Depth:	0.15 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.466E+00	6.456E+00	6.435E+00	6.363E+00	6.166E+00	5.553E+00	4.283E+00	1.720E+00
M(t):	2.586E-01	2.582E-01	2.574E-01	2.545E-01	2.466E-01	2.221E-01	1.713E-01	6.878E-02

Maximum TDOSE(t): 6.466E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Root CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.351E-06	0.0000	5.795E-06	0.0000	0.000E+00	0.0000	2.016E-01	0.0312	1.917E-05	0.0000	2.135E-06	0.0000	1.032E-04	0.0000
Np-237	1.216E-02	0.0019	7.041E-06	0.0000	0.000E+00	0.0000	4.919E+00	0.7608	8.693E-03	0.0013	2.341E-04	0.0000	1.259E-04	0.0000
Pu-239	1.956E-06	0.0000	5.605E-06	0.0000	0.000E+00	0.0000	1.962E-01	0.0303	3.732E-05	0.0000	1.029E-06	0.0000	1.005E-04	0.0000
Pu-240	4.434E-08	0.0000	5.605E-06	0.0000	0.000E+00	0.0000	1.962E-01	0.0303	3.732E-05	0.0000	1.029E-06	0.0000	1.005E-04	0.0000
Tc-99	1.195E-07	0.0000	1.087E-10	0.0000	0.000E+00	0.0000	7.500E-01	0.1160	1.306E-04	0.0000	3.548E-03	0.0005	4.143E-08	0.0000
U-234	5.408E-07	0.0000	1.724E-06	0.0000	0.000E+00	0.0000	5.804E-02	0.0090	1.356E-04	0.0000	1.700E-04	0.0000	8.033E-06	0.0000
U-235	5.221E-03	0.0008	1.607E-06	0.0000	0.000E+00	0.0000	5.489E-02	0.0085	1.281E-04	0.0000	1.606E-04	0.0000	7.593E-06	0.0000
U-238	3.041E-03	0.0005	1.542E-06	0.0000	0.000E+00	0.0000	5.511E-02	0.0085	1.288E-04	0.0000	1.614E-04	0.0000	7.627E-06	0.0000
Total	2.042E-02	0.0032	2.892E-05	0.0000	0.000E+00	0.0000	6.432E+00	0.9947	9.310E-03	0.0014	4.278E-03	0.0007	4.534E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.018E-01	0.0312
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E+00	0.7641
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E-01	0.0304
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E-01	0.0304
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.537E-01	0.1166
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.836E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.041E-02	0.0093
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.845E-02	0.0090
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.466E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.457E-06	0.0000	1.736E-05	0.0000	0.000E+00	0.0000	2.015E-01	0.0312	2.233E-05	0.0000	2.590E-06	0.0000	3.093E-04	0.0000
Np-237	1.226E-02	0.0019	2.106E-05	0.0000	0.000E+00	0.0000	4.907E+00	0.7602	8.749E-03	0.0014	2.363E-04	0.0000	3.766E-04	0.0001
Pu-239	1.982E-06	0.0000	1.681E-05	0.0000	0.000E+00	0.0000	1.964E-01	0.0304	4.352E-05	0.0000	1.250E-06	0.0000	3.015E-04	0.0000
Pu-240	4.532E-08	0.0000	1.681E-05	0.0000	0.000E+00	0.0000	1.964E-01	0.0304	4.352E-05	0.0000	1.249E-06	0.0000	3.014E-04	0.0000
Tc-99	1.220E-07	0.0000	3.257E-10	0.0000	0.000E+00	0.0000	7.500E-01	0.1162	1.306E-04	0.0000	3.548E-03	0.0005	1.242E-07	0.0000
U-234	5.528E-07	0.0000	5.172E-06	0.0000	0.000E+00	0.0000	5.807E-02	0.0090	1.421E-04	0.0000	1.808E-04	0.0000	2.409E-05	0.0000
U-235	5.293E-03	0.0008	4.821E-06	0.0000	0.000E+00	0.0000	5.504E-02	0.0085	1.343E-04	0.0000	1.708E-04	0.0000	2.279E-05	0.0000
U-238	3.068E-03	0.0005	4.625E-06	0.0000	0.000E+00	0.0000	5.513E-02	0.0085	1.350E-04	0.0000	1.716E-04	0.0000	2.288E-05	0.0000
Total	2.063E-02	0.0032	8.667E-05	0.0000	0.000E+00	0.0000	6.420E+00	0.9945	9.401E-03	0.0015	4.313E-03	0.0007	1.359E-03	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.018E-01	0.0313
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.929E+00	0.7635
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.967E-01	0.0305
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.967E-01	0.0305
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.537E-01	0.1168
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.842E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.067E-02	0.0094
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.854E-02	0.0091
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.456E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.680E-06	0.0000	4.038E-05	0.0000	0.000E+00	0.0000	2.011E-01	0.0313	2.864E-05	0.0000	3.496E-06	0.0000	7.193E-04	0.0001
Np-237	1.248E-02	0.0019	4.883E-05	0.0000	0.000E+00	0.0000	4.883E+00	0.7589	8.861E-03	0.0014	2.407E-04	0.0000	8.731E-04	0.0001
Pu-239	2.037E-06	0.0000	3.923E-05	0.0000	0.000E+00	0.0000	1.967E-01	0.0306	5.599E-05	0.0000	1.692E-06	0.0000	7.033E-04	0.0001
Pu-240	4.735E-08	0.0000	3.921E-05	0.0000	0.000E+00	0.0000	1.966E-01	0.0306	5.598E-05	0.0000	1.691E-06	0.0000	7.031E-04	0.0001
Tc-99	1.272E-07	0.0000	7.589E-10	0.0000	0.000E+00	0.0000	7.501E-01	0.1166	1.307E-04	0.0000	3.548E-03	0.0006	2.894E-07	0.0000
U-234	5.817E-07	0.0000	1.206E-05	0.0000	0.000E+00	0.0000	5.812E-02	0.0090	1.551E-04	0.0000	2.023E-04	0.0000	5.618E-05	0.0000
U-235	5.441E-03	0.0008	1.125E-05	0.0000	0.000E+00	0.0000	5.534E-02	0.0086	1.466E-04	0.0000	1.911E-04	0.0000	5.324E-05	0.0000
U-238	3.123E-03	0.0005	1.078E-05	0.0000	0.000E+00	0.0000	5.519E-02	0.0086	1.473E-04	0.0000	1.920E-04	0.0000	5.334E-05	0.0000
Total	2.105E-02	0.0033	2.017E-04	0.0000	0.000E+00	0.0000	6.397E+00	0.9940	9.581E-03	0.0015	4.381E-03	0.0007	3.162E-03	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.019E-01	0.0314
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.906E+00	0.7624
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.975E-01	0.0307
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.974E-01	0.0307
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.538E-01	0.1171
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.855E-02	0.0091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.119E-02	0.0095
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.871E-02	0.0091
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.435E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.572E-06	0.0000	1.198E-04	0.0000	0.000E+00	0.0000	2.000E-01	0.0314	5.042E-05	0.0000	6.619E-06	0.0000	2.134E-03	0.0003
Np-237	1.328E-02	0.0021	1.432E-04	0.0000	0.000E+00	0.0000	4.801E+00	0.7544	9.237E-03	0.0015	2.555E-04	0.0000	2.561E-03	0.0004
Pu-239	2.240E-06	0.0000	1.176E-04	0.0000	0.000E+00	0.0000	1.976E-01	0.0311	9.959E-05	0.0000	3.237E-06	0.0000	2.109E-03	0.0003
Pu-240	5.521E-08	0.0000	1.175E-04	0.0000	0.000E+00	0.0000	1.975E-01	0.0310	9.951E-05	0.0000	3.235E-06	0.0000	2.107E-03	0.0003
Tc-99	1.469E-07	0.0000	2.265E-09	0.0000	0.000E+00	0.0000	7.502E-01	0.1179	1.307E-04	0.0000	3.549E-03	0.0006	8.635E-07	0.0000
U-234	7.390E-07	0.0000	3.610E-05	0.0000	0.000E+00	0.0000	5.831E-02	0.0092	2.006E-04	0.0000	2.772E-04	0.0000	1.682E-04	0.0000
U-235	5.991E-03	0.0009	3.377E-05	0.0000	0.000E+00	0.0000	5.643E-02	0.0089	1.895E-04	0.0000	2.619E-04	0.0000	1.605E-04	0.0000
U-238	3.325E-03	0.0005	3.228E-05	0.0000	0.000E+00	0.0000	5.537E-02	0.0087	1.904E-04	0.0000	2.632E-04	0.0000	1.597E-04	0.0000
Total	2.260E-02	0.0036	6.003E-04	0.0001	0.000E+00	0.0000	6.316E+00	0.9925	1.020E-02	0.0016	4.620E-03	0.0007	9.399E-03	0.0015

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.023E-01	0.0318
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.826E+00	0.7584
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.999E-01	0.0314
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.998E-01	0.0314
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.539E-01	0.1185
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.899E-02	0.0093
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.306E-02	0.0099
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.934E-02	0.0093
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.363E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.428E-06	0.0000	3.369E-04	0.0001	0.000E+00	0.0000	1.968E-01	0.0319	1.100E-04	0.0000	1.516E-05	0.0000	6.001E-03	0.0010
Np-237	1.584E-02	0.0026	3.899E-04	0.0001	0.000E+00	0.0000	4.571E+00	0.7413	1.020E-02	0.0017	2.935E-04	0.0000	6.971E-03	0.0011
Pu-239	2.941E-06	0.0000	3.409E-04	0.0001	0.000E+00	0.0000	2.004E-01	0.0325	2.238E-04	0.0000	7.642E-06	0.0000	6.113E-03	0.0010
Pu-240	8.561E-08	0.0000	3.401E-04	0.0001	0.000E+00	0.0000	1.999E-01	0.0324	2.233E-04	0.0000	7.625E-06	0.0000	6.098E-03	0.0010
Tc-99	2.219E-07	0.0000	6.477E-09	0.0000	0.000E+00	0.0000	7.504E-01	0.1217	1.308E-04	0.0000	3.552E-03	0.0006	2.470E-06	0.0000
U-234	1.780E-06	0.0000	1.042E-04	0.0000	0.000E+00	0.0000	5.886E-02	0.0095	3.292E-04	0.0001	4.895E-04	0.0001	4.854E-04	0.0001
U-235	7.893E-03	0.0013	9.894E-05	0.0000	0.000E+00	0.0000	5.965E-02	0.0097	3.111E-04	0.0001	4.626E-04	0.0001	4.761E-04	0.0001
U-238	3.975E-03	0.0006	9.314E-05	0.0000	0.000E+00	0.0000	5.588E-02	0.0091	3.126E-04	0.0001	4.648E-04	0.0001	4.607E-04	0.0001
Total	2.772E-02	0.0045	1.704E-03	0.0003	0.000E+00	0.0000	6.092E+00	0.9881	1.184E-02	0.0019	5.293E-03	0.0009	2.661E-02	0.0043

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.032E-01	0.0330
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.604E+00	0.7468
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.071E-01	0.0336
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.066E-01	0.0335
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.541E-01	0.1223
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.027E-02	0.0098
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.889E-02	0.0112
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.118E-02	0.0099
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.166E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.915E-05	0.0000	9.916E-04	0.0002	0.000E+00	0.0000	1.854E-01	0.0334	2.895E-04	0.0001	4.090E-05	0.0000	1.766E-02	0.0032
Np-237	2.946E-02	0.0053	1.024E-03	0.0002	0.000E+00	0.0000	3.842E+00	0.6919	1.242E-02	0.0022	3.851E-04	0.0001	1.831E-02	0.0033
Pu-239	7.616E-06	0.0000	1.116E-03	0.0002	0.000E+00	0.0000	2.099E-01	0.0378	6.549E-04	0.0001	2.293E-05	0.0000	2.001E-02	0.0036
Pu-240	3.974E-07	0.0000	1.107E-03	0.0002	0.000E+00	0.0000	2.083E-01	0.0375	6.499E-04	0.0001	2.275E-05	0.0000	1.985E-02	0.0036
Tc-99	9.401E-07	0.0000	2.022E-08	0.0000	0.000E+00	0.0000	7.498E-01	0.1350	1.308E-04	0.0000	3.555E-03	0.0006	7.709E-06	0.0000
U-234	1.877E-05	0.0000	3.360E-04	0.0001	0.000E+00	0.0000	6.078E-02	0.0109	7.662E-04	0.0001	1.211E-03	0.0002	1.565E-03	0.0003
U-235	2.078E-02	0.0037	3.453E-04	0.0001	0.000E+00	0.0000	7.182E-02	0.0129	7.247E-04	0.0001	1.145E-03	0.0002	1.725E-03	0.0003
U-238	7.487E-03	0.0013	2.999E-04	0.0001	0.000E+00	0.0000	5.759E-02	0.0104	7.275E-04	0.0001	1.150E-03	0.0002	1.484E-03	0.0003
Total	5.783E-02	0.0104	5.220E-03	0.0009	0.000E+00	0.0000	5.385E+00	0.9698	1.636E-02	0.0029	7.532E-03	0.0014	8.061E-02	0.0145

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.045E-01	0.0368
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.904E+00	0.7030
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.317E-01	0.0417
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.299E-01	0.0414
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.535E-01	0.1357
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.467E-02	0.0116
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.654E-02	0.0174
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.874E-02	0.0124
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.553E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.397E-03	0.0015	1.786E-03	0.0004	0.000E+00	0.0000	1.493E-01	0.0349	5.063E-04	0.0001	7.196E-05	0.0000	3.182E-02	0.0074
Np-237	9.634E-02	0.0225	1.333E-03	0.0003	0.000E+00	0.0000	2.232E+00	0.5210	1.129E-02	0.0026	3.718E-04	0.0001	2.382E-02	0.0056
Pu-239	6.730E-05	0.0000	2.722E-03	0.0006	0.000E+00	0.0000	2.287E-01	0.0534	1.549E-03	0.0004	5.461E-05	0.0000	4.881E-02	0.0114
Pu-240	3.408E-05	0.0000	2.660E-03	0.0006	0.000E+00	0.0000	2.234E-01	0.0522	1.513E-03	0.0004	5.338E-05	0.0000	4.769E-02	0.0111
Tc-99	2.344E-05	0.0000	4.309E-08	0.0000	0.000E+00	0.0000	7.135E-01	0.1666	1.248E-04	0.0000	3.393E-03	0.0008	1.643E-05	0.0000
U-234	5.070E-04	0.0001	7.853E-04	0.0002	0.000E+00	0.0000	6.438E-02	0.0150	1.611E-03	0.0004	2.607E-03	0.0006	3.670E-03	0.0009
U-235	1.635E-01	0.0382	1.014E-03	0.0002	0.000E+00	0.0000	1.071E-01	0.0250	1.525E-03	0.0004	2.461E-03	0.0006	5.466E-03	0.0013
U-238	3.174E-02	0.0074	6.986E-04	0.0002	0.000E+00	0.0000	5.989E-02	0.0140	1.525E-03	0.0004	2.467E-03	0.0006	3.455E-03	0.0008
Total	2.986E-01	0.0697	1.100E-02	0.0026	0.000E+00	0.0000	3.778E+00	0.8820	1.965E-02	0.0046	1.148E-02	0.0027	1.648E-01	0.0385

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.899E-01	0.0443
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.365E+00	0.5521
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.819E-01	0.0658
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.754E-01	0.0643
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.171E-01	0.1674
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.356E-02	0.0172
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.810E-01	0.0656
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.978E-02	0.0233
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.283E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.072E-03	0.0012	5.775E-04	0.0003	0.000E+00	0.0000	4.835E-02	0.0281	1.641E-04	0.0001	2.328E-05	0.0000	1.029E-02	0.0060
Np-237	9.990E-03	0.0058	1.397E-04	0.0001	0.000E+00	0.0000	2.308E-01	0.1342	1.169E-03	0.0007	4.120E-05	0.0000	2.471E-03	0.0014
Pu-239	6.298E-05	0.0000	2.544E-03	0.0015	0.000E+00	0.0000	2.136E-01	0.1242	1.447E-03	0.0008	5.103E-05	0.0000	4.561E-02	0.0265
Pu-240	3.017E-05	0.0000	2.355E-03	0.0014	0.000E+00	0.0000	1.977E-01	0.1150	1.340E-03	0.0008	4.729E-05	0.0000	4.222E-02	0.0246
Tc-99	1.364E-05	0.0000	2.509E-08	0.0000	0.000E+00	0.0000	4.153E-01	0.2415	7.264E-05	0.0000	1.975E-03	0.0011	9.566E-06	0.0000
U-234	3.960E-03	0.0023	6.334E-04	0.0004	0.000E+00	0.0000	6.266E-02	0.0364	1.337E-03	0.0008	2.183E-03	0.0013	3.108E-03	0.0018
U-235	1.360E-01	0.0791	1.464E-03	0.0009	0.000E+00	0.0000	1.865E-01	0.1085	1.230E-03	0.0007	1.969E-03	0.0011	8.889E-03	0.0052
U-238	2.516E-02	0.0146	5.550E-04	0.0003	0.000E+00	0.0000	4.757E-02	0.0277	1.212E-03	0.0007	1.960E-03	0.0011	2.745E-03	0.0016
Total	1.773E-01	0.1031	8.268E-03	0.0048	0.000E+00	0.0000	1.402E+00	0.8156	7.971E-03	0.0046	8.249E-03	0.0048	1.153E-01	0.0671

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.148E-02	0.0357
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.446E-01	0.1422
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.633E-01	0.1531
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.437E-01	0.1417
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.173E-01	0.2427
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.388E-02	0.0430
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.361E-01	0.1955
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.920E-02	0.0461
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.720E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root CSM - AF 3,000 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.018E-01	2.018E-01	2.019E-01	2.023E-01	2.032E-01	2.044E-01	1.896E-01	6.128E-02
Am-241	Np-237+D	1.000E+00	7.544E-07	2.348E-06	5.527E-06	1.650E-05	4.659E-05	1.380E-04	2.968E-04	1.993E-04
Am-241	U-233	1.000E+00	1.975E-14	1.164E-13	5.623E-13	4.767E-12	3.922E-11	4.115E-10	3.137E-09	1.207E-08
Am-241	Th-229+D	1.000E+00	1.944E-18	2.423E-17	2.601E-16	6.661E-15	1.659E-13	6.769E-12	2.927E-10	4.874E-09
Am-241	ΣDSR (j)		2.018E-01	2.018E-01	2.019E-01	2.023E-01	2.032E-01	2.045E-01	1.899E-01	6.148E-02
Np-237+D	Np-237+D	1.000E+00	4.941E+00	4.929E+00	4.906E+00	4.826E+00	4.604E+00	3.903E+00	2.365E+00	2.444E-01
Np-237+D	U-233	1.000E+00	1.652E-07	4.286E-07	9.484E-07	2.762E-06	7.890E-06	2.514E-05	6.432E-05	8.247E-05
Np-237+D	Th-229+D	1.000E+00	2.191E-11	1.327E-10	6.636E-10	5.828E-09	5.041E-08	6.301E-07	9.367E-06	5.363E-05
Np-237+D	ΣDSR (j)		4.941E+00	4.929E+00	4.906E+00	4.826E+00	4.604E+00	3.904E+00	2.365E+00	2.446E-01
Pu-239	Pu-239	1.000E+00	1.964E-01	1.967E-01	1.975E-01	1.999E-01	2.071E-01	2.317E-01	2.819E-01	2.633E-01
Pu-239	U-235+D	1.000E+00	2.852E-11	8.805E-11	2.082E-10	6.377E-10	1.952E-09	8.169E-09	7.003E-08	2.011E-07
Pu-239	Pa-231	1.000E+00	1.920E-14	1.393E-13	7.484E-13	6.782E-12	5.818E-11	6.641E-10	6.494E-09	6.422E-08
Pu-239	Ac-227+D	1.000E+00	4.749E-17	5.265E-16	4.977E-15	1.111E-13	2.335E-12	6.314E-11	1.253E-09	1.431E-08
Pu-239	ΣDSR (j)		1.964E-01	1.967E-01	1.975E-01	1.999E-01	2.071E-01	2.317E-01	2.819E-01	2.633E-01
Pu-240	Pu-240	4.950E-08	9.721E-09	9.738E-09	9.771E-09	9.889E-09	1.022E-08	1.138E-08	1.363E-08	1.206E-08
Pu-240	Pu-240	1.000E+00	1.964E-01	1.967E-01	1.974E-01	1.998E-01	2.066E-01	2.299E-01	2.754E-01	2.437E-01
Pu-240	U-236	1.000E+00	7.846E-10	2.426E-09	5.728E-09	1.740E-08	5.179E-08	1.838E-07	6.207E-07	1.732E-06
Pu-240	Th-232	1.000E+00	4.580E-20	2.857E-19	1.431E-18	1.257E-17	1.088E-16	1.328E-15	1.451E-14	1.431E-13
Pu-240	Ra-228+D	1.000E+00	3.852E-20	6.031E-19	6.892E-18	1.556E-16	2.549E-15	4.195E-14	5.073E-13	5.202E-12
Pu-240	Th-228+D	1.000E+00	4.661E-22	1.034E-20	1.850E-19	7.753E-18	1.991E-16	5.347E-15	1.442E-13	1.498E-12
Pu-240	ΣDSR (j)		1.964E-01	1.967E-01	1.974E-01	1.998E-01	2.066E-01	2.299E-01	2.754E-01	2.437E-01
Tc-99	Tc-99	1.000E+00	7.537E-01	7.537E-01	7.538E-01	7.539E-01	7.541E-01	7.535E-01	7.171E-01	4.173E-01
U-234	U-234	1.000E+00	5.836E-02	5.842E-02	5.855E-02	5.899E-02	6.025E-02	6.449E-02	7.166E-02	5.668E-02
U-234	Th-230	1.000E+00	1.583E-07	4.329E-07	9.814E-07	2.935E-06	8.804E-06	3.266E-05	1.199E-04	3.552E-04
U-234	Ra-226+D	1.000E+00	3.443E-09	2.543E-08	1.377E-07	1.255E-06	1.085E-05	1.283E-04	1.492E-03	1.382E-02
U-234	Pb-210+D	1.000E+00	2.487E-11	2.469E-10	2.081E-09	4.161E-08	8.187E-07	1.997E-05	2.837E-04	3.038E-03
U-234	ΣDSR (j)		5.836E-02	5.842E-02	5.855E-02	5.899E-02	6.027E-02	6.467E-02	7.356E-02	7.388E-02
U-235+D	U-235+D	1.000E+00	6.035E-02	6.048E-02	6.075E-02	6.172E-02	6.480E-02	8.158E-02	2.284E-01	1.810E-01
U-235+D	Pa-231	1.000E+00	5.986E-05	1.842E-04	4.337E-04	1.313E-03	3.872E-03	1.338E-02	4.345E-02	1.261E-01
U-235+D	Ac-227+D	1.000E+00	1.708E-07	8.940E-07	3.973E-06	3.053E-05	2.147E-04	1.580E-03	9.239E-03	2.900E-02
U-235+D	ΣDSR (j)		6.041E-02	6.067E-02	6.119E-02	6.306E-02	6.889E-02	9.654E-02	2.810E-01	3.361E-01
U-238	U-238	5.400E-05	2.839E-06	2.842E-06	2.849E-06	2.870E-06	2.932E-06	3.139E-06	3.487E-06	2.763E-06
U-238+D	U-238+D	9.999E-01	5.845E-02	5.853E-02	5.871E-02	5.933E-02	6.117E-02	6.872E-02	9.971E-02	7.902E-02
U-238+D	U-234	9.999E-01	8.273E-08	2.484E-07	5.809E-07	1.756E-06	5.209E-06	1.838E-05	6.107E-05	1.610E-04
U-238+D	Th-230	9.999E-01	1.619E-13	1.003E-12	5.020E-12	4.405E-11	3.811E-10	4.631E-09	5.028E-08	4.770E-07
U-238+D	Ra-226+D	9.999E-01	2.370E-15	3.795E-14	4.577E-13	1.244E-11	3.123E-10	1.216E-08	4.213E-07	1.281E-05
U-238+D	Pb-210+D	9.999E-01	1.604E-17	3.289E-16	5.820E-15	3.297E-13	1.880E-11	1.598E-09	7.349E-08	2.736E-06
U-238+D	ΣDSR (j)		5.845E-02	5.853E-02	5.871E-02	5.933E-02	6.118E-02	6.873E-02	9.977E-02	7.920E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		1.239E+02	1.239E+02	1.238E+02	1.236E+02	1.230E+02	1.222E+02	1.316E+02	4.067E+02
Np-237		5.060E+00	5.072E+00	5.096E+00	5.180E+00	5.430E+00	6.404E+00	1.057E+01	1.022E+02
Pu-239		1.273E+02	1.271E+02	1.266E+02	1.250E+02	1.207E+02	1.079E+02	8.869E+01	9.494E+01
Pu-240		1.273E+02	1.271E+02	1.266E+02	1.251E+02	1.210E+02	1.087E+02	9.079E+01	1.026E+02
Tc-99		3.317E+01	3.317E+01	3.317E+01	3.316E+01	3.315E+01	3.318E+01	3.486E+01	5.990E+01
U-234		4.284E+02	4.279E+02	4.270E+02	4.238E+02	4.148E+02	3.866E+02	3.399E+02	3.384E+02
U-235		4.138E+02	4.121E+02	4.086E+02	3.964E+02	3.629E+02	2.590E+02	8.895E+01	7.438E+01
U-238		4.277E+02	4.271E+02	4.258E+02	4.213E+02	4.086E+02	3.637E+02	2.506E+02	3.157E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	249.5 ± 0.5	2.059E-01	1.214E+02	2.018E-01	1.239E+02
Np-237	1.000E+00	0.000E+00	4.941E+00	5.060E+00	4.941E+00	5.060E+00
Pu-239	1.000E+00	249.9 ± 0.5	2.832E-01	8.826E+01	1.964E-01	1.273E+02
Pu-240	1.000E+00	249.9 ± 0.5	2.778E-01	9.000E+01	1.964E-01	1.273E+02
Tc-99	1.000E+00	44.00 ± 0.09	7.542E-01	3.315E+01	7.537E-01	3.317E+01
U-234	1.000E+00	249.7 ± 0.5	7.422E-02	3.369E+02	5.836E-02	4.284E+02
U-235	1.000E+00	1.000E+03	3.361E-01	7.438E+01	6.041E-02	4.138E+02
U-238	1.000E+00	249.7 ± 0.5	1.014E-01	2.465E+02	5.845E-02	4.277E+02

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.018E-01	2.018E-01	2.019E-01	2.023E-01	2.032E-01	2.044E-01	1.896E-01	6.128E-02
Np-237	Am-241	1.000E+00	7.544E-07	2.348E-06	5.527E-06	1.650E-05	4.659E-05	1.380E-04	2.968E-04	1.993E-04
Np-237	Np-237	1.000E+00	4.941E+00	4.929E+00	4.906E+00	4.826E+00	4.604E+00	3.903E+00	2.365E+00	2.444E-01
Np-237	ΣDOSE (j)		4.941E+00	4.929E+00	4.906E+00	4.826E+00	4.604E+00	3.904E+00	2.365E+00	2.446E-01
U-233	Am-241	1.000E+00	1.975E-14	1.164E-13	5.623E-13	4.767E-12	3.922E-11	4.115E-10	3.137E-09	1.207E-08
U-233	Np-237	1.000E+00	1.652E-07	4.286E-07	9.484E-07	2.762E-06	7.890E-06	2.514E-05	6.432E-05	8.247E-05
U-233	ΣDOSE (j)		1.652E-07	4.286E-07	9.484E-07	2.762E-06	7.890E-06	2.514E-05	6.432E-05	8.248E-05
Th-229	Am-241	1.000E+00	1.944E-18	2.423E-17	2.601E-16	6.661E-15	1.659E-13	6.769E-12	2.927E-10	4.874E-09
Th-229	Np-237	1.000E+00	2.191E-11	1.327E-10	6.636E-10	5.828E-09	5.041E-08	6.301E-07	9.367E-06	5.363E-05
Th-229	ΣDOSE (j)		2.191E-11	1.327E-10	6.636E-10	5.828E-09	5.041E-08	6.301E-07	9.367E-06	5.363E-05
Pu-239	Pu-239	1.000E+00	1.964E-01	1.967E-01	1.975E-01	1.999E-01	2.071E-01	2.317E-01	2.819E-01	2.633E-01
U-235	Pu-239	1.000E+00	2.852E-11	8.805E-11	2.082E-10	6.377E-10	1.952E-09	8.169E-09	7.003E-08	2.011E-07
U-235	U-235	1.000E+00	6.035E-02	6.048E-02	6.075E-02	6.172E-02	6.480E-02	8.158E-02	2.284E-01	1.810E-01
U-235	ΣDOSE (j)		6.035E-02	6.048E-02	6.075E-02	6.172E-02	6.480E-02	8.158E-02	2.284E-01	1.810E-01
Pa-231	Pu-239	1.000E+00	1.920E-14	1.393E-13	7.484E-13	6.782E-12	5.818E-11	6.641E-10	6.494E-09	6.422E-08
Pa-231	U-235	1.000E+00	5.986E-05	1.842E-04	4.337E-04	1.313E-03	3.872E-03	1.338E-02	4.345E-02	1.261E-01
Pa-231	ΣDOSE (j)		5.986E-05	1.842E-04	4.337E-04	1.313E-03	3.872E-03	1.338E-02	4.345E-02	1.261E-01
Ac-227	Pu-239	1.000E+00	4.749E-17	5.265E-16	4.977E-15	1.111E-13	2.335E-12	6.314E-11	1.253E-09	1.431E-08
Ac-227	U-235	1.000E+00	1.708E-07	8.940E-07	3.973E-06	3.053E-05	2.147E-04	1.580E-03	9.239E-03	2.900E-02
Ac-227	ΣDOSE (j)		1.708E-07	8.940E-07	3.973E-06	3.053E-05	2.147E-04	1.580E-03	9.239E-03	2.900E-02
Pu-240	Pu-240	4.950E-08	9.721E-09	9.738E-09	9.771E-09	9.889E-09	1.022E-08	1.138E-08	1.363E-08	1.206E-08
Pu-240	Pu-240	1.000E+00	1.964E-01	1.967E-01	1.974E-01	1.998E-01	2.066E-01	2.299E-01	2.754E-01	2.437E-01
Pu-240	ΣDOSE (j)		1.964E-01	1.967E-01	1.974E-01	1.998E-01	2.066E-01	2.299E-01	2.754E-01	2.437E-01
U-236	Pu-240	1.000E+00	7.846E-10	2.426E-09	5.728E-09	1.740E-08	5.179E-08	1.838E-07	6.207E-07	1.732E-06
Th-232	Pu-240	1.000E+00	4.580E-20	2.857E-19	1.431E-18	1.257E-17	1.088E-16	1.328E-15	1.451E-14	1.431E-13
Ra-228	Pu-240	1.000E+00	3.852E-20	6.031E-19	6.892E-18	1.556E-16	2.549E-15	4.195E-14	5.073E-13	5.202E-12
Th-228	Pu-240	1.000E+00	4.661E-22	1.034E-20	1.850E-19	7.753E-18	1.991E-16	5.347E-15	1.442E-13	1.498E-12
Tc-99	Tc-99	1.000E+00	7.537E-01	7.537E-01	7.538E-01	7.539E-01	7.541E-01	7.535E-01	7.171E-01	4.173E-01
U-234	U-234	1.000E+00	5.836E-02	5.842E-02	5.855E-02	5.899E-02	6.025E-02	6.449E-02	7.167E-02	5.668E-02
U-234	U-238	9.999E-01	8.273E-08	2.484E-07	5.809E-07	1.756E-06	5.209E-06	1.838E-05	6.107E-05	1.610E-04
U-234	ΣDOSE (j)		5.836E-02	5.842E-02	5.855E-02	5.899E-02	6.025E-02	6.451E-02	7.173E-02	5.684E-02
Th-230	U-234	1.000E+00	1.583E-07	4.329E-07	9.814E-07	2.935E-06	8.804E-06	3.266E-05	1.199E-04	3.552E-04
Th-230	U-238	9.999E-01	1.619E-13	1.003E-12	5.020E-12	4.405E-11	3.811E-10	4.631E-09	5.028E-08	4.770E-07
Th-230	ΣDOSE (j)		1.583E-07	4.329E-07	9.814E-07	2.935E-06	8.805E-06	3.266E-05	1.200E-04	3.557E-04

Summary : Hematite - Root CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	3.443E-09	2.543E-08	1.377E-07	1.255E-06	1.085E-05	1.283E-04	1.492E-03	1.382E-02
Ra-226	U-238	9.999E-01	2.370E-15	3.795E-14	4.577E-13	1.244E-11	3.123E-10	1.216E-08	4.213E-07	1.281E-05
Ra-226	ΣDOSE(j)		3.443E-09	2.543E-08	1.377E-07	1.255E-06	1.085E-05	1.283E-04	1.492E-03	1.383E-02
Pb-210	U-234	1.000E+00	2.487E-11	2.469E-10	2.081E-09	4.161E-08	8.187E-07	1.997E-05	2.837E-04	3.038E-03
Pb-210	U-238	9.999E-01	1.604E-17	3.289E-16	5.820E-15	3.297E-13	1.880E-11	1.598E-09	7.349E-08	2.736E-06
Pb-210	ΣDOSE(j)		2.487E-11	2.469E-10	2.081E-09	4.161E-08	8.187E-07	1.997E-05	2.838E-04	3.041E-03
U-238	U-238	5.400E-05	2.839E-06	2.842E-06	2.849E-06	2.870E-06	2.932E-06	3.139E-06	3.487E-06	2.763E-06
U-238	U-238	9.999E-01	5.845E-02	5.853E-02	5.871E-02	5.933E-02	6.117E-02	6.872E-02	9.971E-02	7.902E-02
U-238	ΣDOSE(j)		5.845E-02	5.854E-02	5.871E-02	5.933E-02	6.118E-02	6.872E-02	9.972E-02	7.902E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.840E-01	9.527E-01	8.510E-01	6.163E-01	1.992E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.231E-07	9.647E-07	3.161E-06	9.035E-06	2.544E-05	4.738E-05	3.185E-05
Np-237	Np-237	1.000E+00	1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.910E-02
Np-237	ΣS(j):		1.000E+00	9.968E-01	9.903E-01	9.681E-01	9.073E-01	7.232E-01	3.782E-01	3.913E-02
U-233	Am-241	1.000E+00	0.000E+00	7.070E-13	6.341E-12	6.961E-11	6.053E-10	5.967E-09	3.853E-08	1.487E-07
U-233	Np-237	1.000E+00	0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.016E-03
U-233	ΣS(j):		0.000E+00	4.365E-06	1.305E-05	4.296E-05	1.244E-04	3.670E-04	7.916E-04	1.017E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.226E-17	5.996E-16	2.200E-14	5.786E-13	1.956E-11	4.105E-10	6.861E-09
Th-229	Np-237	1.000E+00	0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.551E-05
Th-229	ΣS(j):		0.000E+00	2.062E-10	1.852E-09	2.040E-08	1.792E-07	1.832E-06	1.316E-05	7.552E-05
Pu-239	Pu-239	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.971E-01	9.904E-01	9.713E-01	9.076E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.847E-10	2.953E-09	9.828E-09	2.936E-08	9.640E-08	2.771E-07	7.966E-07
U-235	U-235	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
U-235	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.372E-14	1.040E-12	9.331E-12	1.025E-10	8.925E-10	8.848E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Pa-231	ΣS(j):		0.000E+00	2.115E-05	6.344E-05	2.112E-04	6.310E-04	2.074E-03	5.981E-03	1.739E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.914E-15	1.021E-13	2.379E-12	5.755E-11	7.264E-10	8.325E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.935E-06	3.032E-05	2.247E-04	1.452E-03	5.369E-03	1.689E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.947E-08	4.941E-08	4.924E-08	4.865E-08	4.698E-08	4.159E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
Pu-240	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.983E-01	9.948E-01	9.827E-01	9.491E-01	8.402E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.874E-08	2.953E-07	8.814E-07	2.886E-06	8.232E-06	2.301E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.301E-19	6.569E-18	7.290E-17	6.539E-16	7.180E-15	6.248E-14	6.180E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.847E-20	7.252E-19	2.224E-17	3.898E-16	6.094E-15	5.919E-14	6.086E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.126E-16	5.744E-15	5.811E-14	6.055E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.992E-01	9.977E-01	9.923E-01	9.771E-01	9.256E-01	7.931E-01	4.617E-01
U-234	U-234	1.000E+00	1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.900E-01	9.671E-01	9.044E-01	7.155E-01
U-234	U-238	9.999E-01	0.000E+00	2.834E-06	8.496E-06	2.825E-05	8.420E-05	2.742E-04	7.695E-04	2.031E-03
U-234	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01
Th-230	U-234	1.000E+00	0.000E+00	9.000E-06	2.699E-05	8.986E-05	2.687E-04	8.848E-04	2.565E-03	7.609E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.273E-09	1.141E-08	1.247E-07	1.073E-06	1.021E-05
Th-230	ΣS(j):		0.000E+00	9.000E-06	2.699E-05	8.987E-05	2.687E-04	8.850E-04	2.566E-03	7.619E-03

Summary : Hematite - Root CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.899E-05	1.623E-04	1.506E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.971E-14	1.837E-12	4.933E-11	1.792E-09	4.575E-08	1.397E-06
Ra-226	ΣS(j):		0.000E+00	1.949E-09	1.754E-08	1.945E-07	1.741E-06	1.900E-05	1.623E-04	1.508E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.417E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.344E-13	9.656E-12	8.346E-10	3.395E-08	1.275E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.326E-10	1.868E-08	4.357E-07	1.055E-05	1.316E-04	1.418E-03
U-238	U-238	5.400E-05	5.400E-05	5.398E-05	5.395E-05	5.382E-05	5.346E-05	5.224E-05	4.888E-05	3.874E-05
U-238	U-238	9.999E-01	9.999E-01	9.996E-01	9.990E-01	9.966E-01	9.900E-01	9.673E-01	9.052E-01	7.175E-01
U-238	ΣS(j):		1.000E+00	9.997E-01	9.990E-01	9.967E-01	9.901E-01	9.673E-01	9.052E-01	7.175E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.15 seconds

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Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Ra-226+C CSM

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Attachment 4 to HEM-11-91

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Appendix N

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	1.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.770E-02	7.813E-02	7.899E-02	8.208E-02	9.161E-02	1.344E-01	2.525E-01	1.853E-01
M(t):	3.108E-03	3.125E-03	3.160E-03	3.283E-03	3.665E-03	5.375E-03	1.010E-02	7.410E-03

Maximum TDOSE(t): 2.616E-01 mrem/yr at t = 247.6 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.476E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.599E-08	0.0000	2.679E-08	0.0000	0.000E+00	0.0000	8.346E-07	0.0000	4.038E-09	0.0000	5.298E-09	0.0000	4.426E-08	0.0000
Ra-226	2.538E-01	0.9701	7.670E-05	0.0003	0.000E+00	0.0000	7.596E-03	0.0290	1.367E-05	0.0001	2.648E-05	0.0001	1.094E-04	0.0004
Total	2.538E-01	0.9701	7.673E-05	0.0003	0.000E+00	0.0000	7.597E-03	0.0290	1.368E-05	0.0001	2.649E-05	0.0001	1.094E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.476E+02 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.910E-07	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.616E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.616E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.405E-06	0.0001	1.225E-07	0.0000	0.000E+00	0.0000	1.589E-03	0.0204	7.603E-07	0.0000	7.737E-07	0.0000	2.023E-07	0.0000
Ra-226	7.062E-02	0.9089	4.888E-08	0.0000	0.000E+00	0.0000	5.469E-03	0.0704	3.265E-06	0.0000	8.618E-06	0.0001	4.172E-08	0.0000
Total	7.063E-02	0.9090	1.714E-07	0.0000	0.000E+00	0.0000	7.057E-03	0.0908	4.025E-06	0.0001	9.391E-06	0.0001	2.441E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.598E-03	0.0206
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.610E-02	0.9794
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.770E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.259E-06	0.0001	3.574E-07	0.0000	0.000E+00	0.0000	1.541E-03	0.0197	7.698E-07	0.0000	7.941E-07	0.0000	5.904E-07	0.0000
Ra-226	7.104E-02	0.9093	1.566E-07	0.0000	0.000E+00	0.0000	5.522E-03	0.0707	3.305E-06	0.0000	8.679E-06	0.0001	1.416E-07	0.0000
Total	7.105E-02	0.9094	5.140E-07	0.0000	0.000E+00	0.0000	7.063E-03	0.0904	4.075E-06	0.0001	9.473E-06	0.0001	7.321E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.551E-03	0.0198
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.658E-02	0.9802
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.813E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.976E-06	0.0001	7.842E-07	0.0000	0.000E+00	0.0000	1.450E-03	0.0184	7.853E-07	0.0000	8.292E-07	0.0000	1.295E-06	0.0000
Ra-226	7.190E-02	0.9102	4.145E-07	0.0000	0.000E+00	0.0000	5.619E-03	0.0711	3.376E-06	0.0000	8.798E-06	0.0001	4.119E-07	0.0000
Total	7.190E-02	0.9103	1.199E-06	0.0000	0.000E+00	0.0000	7.069E-03	0.0895	4.162E-06	0.0001	9.627E-06	0.0001	1.707E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.461E-03	0.0185
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.753E-02	0.9815
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.899E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.067E-06	0.0001	1.892E-06	0.0000	0.000E+00	0.0000	1.172E-03	0.0143	8.059E-07	0.0000	9.003E-07	0.0000	3.125E-06	0.0000
Ra-226	7.497E-02	0.9133	1.698E-06	0.0000	0.000E+00	0.0000	5.917E-03	0.0721	3.659E-06	0.0000	9.263E-06	0.0001	1.989E-06	0.0000
Total	7.497E-02	0.9134	3.589E-06	0.0000	0.000E+00	0.0000	7.089E-03	0.0864	4.464E-06	0.0001	1.016E-05	0.0001	5.114E-06	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.185E-03	0.0144
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.090E-02	0.9856
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.208E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.068E-06	0.0000	2.943E-06	0.0000	0.000E+00	0.0000	6.374E-04	0.0070	6.989E-07	0.0000	8.400E-07	0.0000	4.861E-06	0.0001
Ra-226	8.442E-02	0.9215	7.416E-06	0.0001	0.000E+00	0.0000	6.506E-03	0.0710	4.622E-06	0.0001	1.084E-05	0.0001	9.901E-06	0.0001
Total	8.443E-02	0.9216	1.036E-05	0.0001	0.000E+00	0.0000	7.143E-03	0.0780	5.321E-06	0.0001	1.168E-05	0.0001	1.476E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.508E-04	0.0071
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.096E-02	0.9929
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.161E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.965E-07	0.0000	1.089E-06	0.0000	0.000E+00	0.0000	7.552E-05	0.0006	1.837E-07	0.0000	2.351E-07	0.0000	1.800E-06	0.0000
Ra-226	1.270E-01	0.9448	3.208E-05	0.0002	0.000E+00	0.0000	7.234E-03	0.0538	8.015E-06	0.0001	1.655E-05	0.0001	4.549E-05	0.0003
Total	1.270E-01	0.9448	3.317E-05	0.0002	0.000E+00	0.0000	7.309E-03	0.0544	8.199E-06	0.0001	1.678E-05	0.0001	4.729E-05	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.983E-05	0.0006
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.343E-01	0.9994
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.344E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.503E-08	0.0000	5.251E-09	0.0000	0.000E+00	0.0000	1.625E-07	0.0000	7.912E-10	0.0000	1.038E-09	0.0000	8.674E-09	0.0000
Ra-226	2.448E-01	0.9697	7.555E-05	0.0003	0.000E+00	0.0000	7.432E-03	0.0294	1.344E-05	0.0001	2.602E-05	0.0001	1.077E-04	0.0004
Total	2.448E-01	0.9697	7.556E-05	0.0003	0.000E+00	0.0000	7.432E-03	0.0294	1.344E-05	0.0001	2.602E-05	0.0001	1.077E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.933E-07	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.525E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.525E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.814E-18	0.0000	1.681E-18	0.0000	0.000E+00	0.0000	5.203E-17	0.0000	2.534E-19	0.0000	3.324E-19	0.0000	2.778E-18	0.0000
Ra-226	1.796E-01	0.9697	5.544E-05	0.0003	0.000E+00	0.0000	5.452E-03	0.0294	9.864E-06	0.0001	1.909E-05	0.0001	7.905E-05	0.0004
Total	1.796E-01	0.9697	5.544E-05	0.0003	0.000E+00	0.0000	5.452E-03	0.0294	9.864E-06	0.0001	1.909E-05	0.0001	7.905E-05	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.189E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.853E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.853E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.598E-03	1.551E-03	1.461E-03	1.185E-03	6.508E-04	7.983E-05	1.933E-07	6.189E-17
Ra-226+D	Ra-226+D	1.000E+00	7.605E-02	7.647E-02	7.733E-02	8.041E-02	8.991E-02	1.326E-01	2.504E-01	1.837E-01
Ra-226+D	Pb-210+D	1.000E+00	5.138E-05	1.028E-04	1.966E-04	4.853E-04	1.052E-03	1.728E-03	2.065E-03	1.515E-03
Ra-226+D	ΣDSR(j)		7.610E-02	7.658E-02	7.753E-02	8.090E-02	9.096E-02	1.343E-01	2.525E-01	1.853E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.565E+04	1.612E+04	1.712E+04	2.111E+04	3.841E+04	3.132E+05	1.293E+08	*7.634E+13	
Ra-226	3.285E+02	3.265E+02	3.225E+02	3.090E+02	2.748E+02	1.861E+02	9.902E+01	1.349E+02	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.6 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.598E-03	1.565E+04	9.910E-07	2.523E+07
Ra-226	1.000E+00	247.6 ± 0.5	2.616E-01	9.557E+01	2.616E-01	9.557E+01

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.598E-03	1.551E-03	1.461E-03	1.185E-03	6.508E-04	7.983E-05	1.933E-07	6.189E-17
Pb-210	Ra-226	1.000E+00	5.138E-05	1.028E-04	1.966E-04	4.853E-04	1.052E-03	1.728E-03	2.065E-03	1.515E-03
Pb-210	ΣDOSE(j)		1.649E-03	1.654E-03	1.657E-03	1.670E-03	1.703E-03	1.808E-03	2.065E-03	1.515E-03
Ra-226	Ra-226	1.000E+00	7.605E-02	7.647E-02	7.733E-02	8.041E-02	8.991E-02	1.326E-01	2.504E-01	1.837E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.50 seconds

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Total Dose Components	
Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
Time = 1.000E+02	14
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Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Ra-226+C CSM

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	10.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.566E-01	3.585E-01	3.622E-01	3.757E-01	4.174E-01	6.115E-01	1.210E+00	8.882E-01
M(t):	1.426E-02	1.434E-02	1.449E-02	1.503E-02	1.670E-02	2.446E-02	4.842E-02	3.553E-02

Maximum TDOSE(t): 1.251E+00 mrem/yr at t = 247.7 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.176E-07	0.0000	3.459E-08	0.0000	0.000E+00	0.0000	8.317E-06	0.0000	4.026E-08	0.0000	5.281E-08	0.0000	4.412E-07	0.0000
Ra-226	1.173E+00	0.9380	9.939E-05	0.0001	0.000E+00	0.0000	7.596E-02	0.0607	1.368E-04	0.0001	2.649E-04	0.0002	1.094E-03	0.0009
Total	1.173E+00	0.9380	9.942E-05	0.0001	0.000E+00	0.0000	7.597E-02	0.0607	1.368E-04	0.0001	2.650E-04	0.0002	1.094E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.204E-06	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.251E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.251E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.542E-05	0.0001	1.586E-07	0.0000	0.000E+00	0.0000	1.589E-02	0.0446	7.603E-06	0.0000	7.737E-06	0.0000	2.023E-06	0.0000
Ra-226	2.858E-01	0.8016	6.331E-08	0.0000	0.000E+00	0.0000	5.469E-02	0.1534	3.265E-05	0.0001	8.618E-05	0.0002	4.172E-07	0.0000
Total	2.859E-01	0.8017	2.220E-07	0.0000	0.000E+00	0.0000	7.057E-02	0.1979	4.025E-05	0.0001	9.391E-05	0.0003	2.441E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.593E-02	0.0447
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.406E-01	0.9553
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.566E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.494E-05	0.0001	4.629E-07	0.0000	0.000E+00	0.0000	1.541E-02	0.0430	7.698E-06	0.0000	7.941E-06	0.0000	5.904E-06	0.0000
Ra-226	2.877E-01	0.8025	2.028E-07	0.0000	0.000E+00	0.0000	5.522E-02	0.1540	3.305E-05	0.0001	8.679E-05	0.0002	1.416E-06	0.0000
Total	2.877E-01	0.8026	6.657E-07	0.0000	0.000E+00	0.0000	7.063E-02	0.1970	4.075E-05	0.0001	9.473E-05	0.0003	7.321E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.546E-02	0.0431
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.430E-01	0.9569
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.585E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.401E-05	0.0001	1.016E-06	0.0000	0.000E+00	0.0000	1.450E-02	0.0400	7.853E-06	0.0000	8.292E-06	0.0000	1.295E-05	0.0000
Ra-226	2.913E-01	0.8043	5.369E-07	0.0000	0.000E+00	0.0000	5.619E-02	0.1551	3.376E-05	0.0001	8.798E-05	0.0002	4.119E-06	0.0000
Total	2.914E-01	0.8044	1.553E-06	0.0000	0.000E+00	0.0000	7.069E-02	0.1952	4.162E-05	0.0001	9.627E-05	0.0003	1.707E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.455E-02	0.0402
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.476E-01	0.9598
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.622E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.101E-05	0.0001	2.450E-06	0.0000	0.000E+00	0.0000	1.172E-02	0.0312	8.059E-06	0.0000	9.003E-06	0.0000	3.125E-05	0.0001
Ra-226	3.045E-01	0.8107	2.199E-06	0.0000	0.000E+00	0.0000	5.917E-02	0.1575	3.659E-05	0.0001	9.263E-05	0.0002	1.989E-05	0.0001
Total	3.046E-01	0.8108	4.649E-06	0.0000	0.000E+00	0.0000	7.089E-02	0.1887	4.464E-05	0.0001	1.016E-04	0.0003	5.114E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.179E-02	0.0314
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.639E-01	0.9686
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.757E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.434E-05	0.0000	3.811E-06	0.0000	0.000E+00	0.0000	6.374E-03	0.0153	6.989E-06	0.0000	8.400E-06	0.0000	4.861E-05	0.0001
Ra-226	3.457E-01	0.8281	9.605E-06	0.0000	0.000E+00	0.0000	6.506E-02	0.1558	4.622E-05	0.0001	1.084E-04	0.0003	9.901E-05	0.0002
Total	3.457E-01	0.8281	1.342E-05	0.0000	0.000E+00	0.0000	7.143E-02	0.1711	5.321E-05	0.0001	1.168E-04	0.0003	1.476E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.456E-03	0.0155
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.110E-01	0.9845
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.174E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.764E-06	0.0000	1.411E-06	0.0000	0.000E+00	0.0000	7.552E-04	0.0012	1.837E-06	0.0000	2.351E-06	0.0000	1.800E-05	0.0000
Ra-226	5.376E-01	0.8792	4.155E-05	0.0001	0.000E+00	0.0000	7.234E-02	0.1183	8.015E-05	0.0001	1.655E-04	0.0003	4.549E-04	0.0007
Total	5.376E-01	0.8792	4.296E-05	0.0001	0.000E+00	0.0000	7.309E-02	0.1195	8.199E-05	0.0001	1.678E-04	0.0003	4.729E-04	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.826E-04	0.0013
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.107E-01	0.9987
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.115E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.426E-08	0.0000	6.801E-09	0.0000	0.000E+00	0.0000	1.625E-06	0.0000	7.912E-09	0.0000	1.038E-08	0.0000	8.674E-08	0.0000
Ra-226	1.135E+00	0.9373	9.785E-05	0.0001	0.000E+00	0.0000	7.432E-02	0.0614	1.344E-04	0.0001	2.602E-04	0.0002	1.077E-03	0.0009
Total	1.135E+00	0.9373	9.786E-05	0.0001	0.000E+00	0.0000	7.432E-02	0.0614	1.344E-04	0.0001	2.602E-04	0.0002	1.077E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.801E-06	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.210E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.210E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.058E-17	0.0000	2.178E-18	0.0000	0.000E+00	0.0000	5.203E-16	0.0000	2.534E-18	0.0000	3.324E-18	0.0000	2.778E-17	0.0000
Ra-226	8.325E-01	0.9373	7.181E-05	0.0001	0.000E+00	0.0000	5.452E-02	0.0614	9.864E-05	0.0001	1.909E-04	0.0002	7.905E-04	0.0009
Total	8.325E-01	0.9373	7.181E-05	0.0001	0.000E+00	0.0000	5.452E-02	0.0614	9.864E-05	0.0001	1.909E-04	0.0002	7.905E-04	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.767E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.882E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.882E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.593E-02	1.546E-02	1.455E-02	1.179E-02	6.456E-03	7.826E-04	1.801E-06	5.767E-16
Ra-226+D	Ra-226+D	1.000E+00	3.401E-01	3.420E-01	3.457E-01	3.590E-01	4.005E-01	5.938E-01	1.191E+00	8.741E-01
Ra-226+D	Pb-210+D	1.000E+00	5.130E-04	1.025E-03	1.960E-03	4.831E-03	1.044E-02	1.694E-02	1.926E-02	1.413E-02
Ra-226+D	ΣDSR(j)		3.406E-01	3.430E-01	3.476E-01	3.639E-01	4.110E-01	6.107E-01	1.210E+00	8.882E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.569E+03	1.617E+03	1.718E+03	2.121E+03	3.872E+03	3.195E+04	1.388E+07	*7.634E+13	
Ra-226	7.339E+01	7.289E+01	7.191E+01	6.871E+01	6.083E+01	4.094E+01	2.065E+01	2.815E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.7 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.593E-02	1.569E+03	9.204E-06	2.716E+06
Ra-226	1.000E+00	247.7 ± 0.5	1.251E+00	1.999E+01	1.251E+00	1.999E+01

Summary : Hematite - Root Ra-226+C CSM

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.593E-02	1.546E-02	1.455E-02	1.179E-02	6.456E-03	7.826E-04	1.801E-06	5.767E-16
Pb-210	Ra-226	1.000E+00	5.130E-04	1.025E-03	1.960E-03	4.831E-03	1.044E-02	1.694E-02	1.926E-02	1.413E-02
Pb-210	ΣDOSE(j)		1.644E-02	1.648E-02	1.651E-02	1.662E-02	1.690E-02	1.773E-02	1.927E-02	1.413E-02
Ra-226	Ra-226	1.000E+00	3.401E-01	3.420E-01	3.457E-01	3.590E-01	4.005E-01	5.938E-01	1.191E+00	8.741E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.46 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Ra-226+C CSM

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area: 100.00 square meters
 Thickness: 1.35 meters
 Cover Depth: 0.15 meters

Pb-210 1.000E+00
 Ra-226 1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.064E+00	1.068E+00	1.074E+00	1.095E+00	1.162E+00	1.479E+00	2.706E+00	1.985E+00
M(t):	4.258E-02	4.271E-02	4.295E-02	4.380E-02	4.647E-02	5.914E-02	1.082E-01	7.942E-02

Maximum TDOSE(t): 2.784E+00 mrem/yr at t = 247.9 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.123E-07	0.0000	4.437E-08	0.0000	0.000E+00	0.0000	8.255E-05	0.0000	3.998E-07	0.0000	5.245E-07	0.0000	4.382E-06	0.0000
Ra-226	2.009E+00	0.7217	1.285E-04	0.0000	0.000E+00	0.0000	7.597E-01	0.2728	1.369E-03	0.0005	2.651E-03	0.0010	1.095E-02	0.0039
Total	2.009E+00	0.7217	1.285E-04	0.0000	0.000E+00	0.0000	7.597E-01	0.2729	1.369E-03	0.0005	2.651E-03	0.0010	1.095E-02	0.0039

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.841E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.784E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.784E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.808E-05	0.0000	2.049E-07	0.0000	0.000E+00	0.0000	1.589E-01	0.1492	7.603E-05	0.0001	7.737E-05	0.0001	2.023E-05	0.0000
Ra-226	3.573E-01	0.3357	8.177E-08	0.0000	0.000E+00	0.0000	5.469E-01	0.5137	3.265E-04	0.0003	8.618E-04	0.0008	4.172E-06	0.0000
Total	3.574E-01	0.3357	2.867E-07	0.0000	0.000E+00	0.0000	7.057E-01	0.6630	4.025E-04	0.0004	9.391E-04	0.0009	2.441E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.591E-01	0.1494
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.054E-01	0.8506
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.064E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.758E-05	0.0000	5.978E-07	0.0000	0.000E+00	0.0000	1.541E-01	0.1443	7.698E-05	0.0001	7.941E-05	0.0001	5.904E-05	0.0001
Ra-226	3.599E-01	0.3371	2.619E-07	0.0000	0.000E+00	0.0000	5.522E-01	0.5172	3.305E-04	0.0003	8.679E-04	0.0008	1.416E-05	0.0000
Total	3.600E-01	0.3372	8.598E-07	0.0000	0.000E+00	0.0000	7.063E-01	0.6615	4.075E-04	0.0004	9.473E-04	0.0009	7.321E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E-01	0.1446
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.133E-01	0.8554
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.068E+00	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.661E-05	0.0000	1.312E-06	0.0000	0.000E+00	0.0000	1.450E-01	0.1351	7.853E-05	0.0001	8.292E-05	0.0001	1.295E-04	0.0001
Ra-226	3.652E-01	0.3401	6.934E-07	0.0000	0.000E+00	0.0000	5.619E-01	0.5233	3.376E-04	0.0003	8.798E-04	0.0008	4.119E-05	0.0000
Total	3.652E-01	0.3402	2.005E-06	0.0000	0.000E+00	0.0000	7.069E-01	0.6584	4.162E-04	0.0004	9.627E-04	0.0009	1.707E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.453E-01	0.1354
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.283E-01	0.8646
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.074E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.347E-05	0.0000	3.164E-06	0.0000	0.000E+00	0.0000	1.172E-01	0.1070	8.059E-05	0.0001	9.003E-05	0.0001	3.125E-04	0.0003
Ra-226	3.842E-01	0.3508	2.840E-06	0.0000	0.000E+00	0.0000	5.917E-01	0.5403	3.659E-04	0.0003	9.263E-04	0.0008	1.989E-04	0.0002
Total	3.842E-01	0.3509	6.004E-06	0.0000	0.000E+00	0.0000	7.089E-01	0.6473	4.464E-04	0.0004	1.016E-03	0.0009	5.114E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.177E-01	0.1075
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.774E-01	0.8925
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.095E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.639E-05	0.0000	4.922E-06	0.0000	0.000E+00	0.0000	6.374E-02	0.0549	6.989E-05	0.0001	8.400E-05	0.0001	4.861E-04	0.0004
Ra-226	4.442E-01	0.3824	1.241E-05	0.0000	0.000E+00	0.0000	6.506E-01	0.5600	4.622E-04	0.0004	1.084E-03	0.0009	9.901E-04	0.0009
Total	4.442E-01	0.3824	1.733E-05	0.0000	0.000E+00	0.0000	7.143E-01	0.6149	5.321E-04	0.0005	1.168E-03	0.0010	1.476E-03	0.0013

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.440E-02	0.0554
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.097E+00	0.9446
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.162E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.690E-06	0.0000	1.822E-06	0.0000	0.000E+00	0.0000	7.552E-03	0.0051	1.837E-05	0.0000	2.351E-05	0.0000	1.800E-04	0.0001
Ra-226	7.403E-01	0.5007	5.367E-05	0.0000	0.000E+00	0.0000	7.234E-01	0.4893	8.015E-04	0.0005	1.655E-03	0.0011	4.549E-03	0.0031
Total	7.403E-01	0.5007	5.549E-05	0.0000	0.000E+00	0.0000	7.309E-01	0.4944	8.199E-04	0.0006	1.678E-03	0.0011	4.729E-03	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.780E-03	0.0053
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.471E+00	0.9947
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.479E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.055E-07	0.0000	8.783E-09	0.0000	0.000E+00	0.0000	1.625E-05	0.0000	7.912E-08	0.0000	1.038E-07	0.0000	8.674E-07	0.0000
Ra-226	1.948E+00	0.7199	1.264E-04	0.0000	0.000E+00	0.0000	7.432E-01	0.2747	1.344E-03	0.0005	2.602E-03	0.0010	1.077E-02	0.0040
Total	1.948E+00	0.7199	1.264E-04	0.0000	0.000E+00	0.0000	7.432E-01	0.2747	1.344E-03	0.0005	2.602E-03	0.0010	1.077E-02	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.742E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.706E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.706E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.377E-17	0.0000	2.813E-18	0.0000	0.000E+00	0.0000	5.203E-15	0.0000	2.534E-17	0.0000	3.324E-17	0.0000	2.778E-16	0.0000
Ra-226	1.429E+00	0.7199	9.274E-05	0.0000	0.000E+00	0.0000	5.452E-01	0.2746	9.864E-04	0.0005	1.909E-03	0.0010	7.905E-03	0.0040
Total	1.429E+00	0.7199	9.274E-05	0.0000	0.000E+00	0.0000	5.452E-01	0.2746	9.864E-04	0.0005	1.909E-03	0.0010	7.905E-03	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.576E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.985E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.985E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.591E-01	1.543E-01	1.453E-01	1.177E-01	6.440E-02	7.780E-03	1.742E-05	5.576E-15
Ra-226+D	Ra-226+D	1.000E+00	9.003E-01	9.031E-01	9.088E-01	9.292E-01	9.931E-01	1.302E+00	2.520E+00	1.849E+00
Ra-226+D	Pb-210+D	1.000E+00	5.127E-03	1.024E-02	1.957E-02	4.823E-02	1.042E-01	1.685E-01	1.864E-01	1.367E-01
Ra-226+D	ΣDSR(j)		9.054E-01	9.133E-01	9.283E-01	9.774E-01	1.097E+00	1.471E+00	2.706E+00	1.985E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.572E+02	1.620E+02	1.720E+02	2.124E+02	3.882E+02	3.213E+03	1.435E+06	*7.634E+13	
Ra-226	2.761E+01	2.737E+01	2.693E+01	2.558E+01	2.278E+01	1.700E+01	9.239E+00	1.259E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.9 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.591E-01	1.572E+02	8.841E-05	2.828E+05
Ra-226	1.000E+00	247.9 ± 0.5	2.784E+00	8.980E+00	2.784E+00	8.980E+00

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.591E-01	1.543E-01	1.453E-01	1.177E-01	6.440E-02	7.780E-03	1.742E-05	5.576E-15
Pb-210	Ra-226	1.000E+00	5.127E-03	1.024E-02	1.957E-02	4.823E-02	1.042E-01	1.685E-01	1.864E-01	1.367E-01
Pb-210	ΣDOSE(j)		1.642E-01	1.646E-01	1.649E-01	1.659E-01	1.686E-01	1.763E-01	1.864E-01	1.367E-01
Ra-226	Ra-226	1.000E+00	9.003E-01	9.031E-01	9.088E-01	9.292E-01	9.931E-01	1.302E+00	2.520E+00	1.849E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.59 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

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Appendix N

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	1000.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.428E+00	7.437E+00	7.450E+00	7.493E+00	7.621E+00	8.131E+00	9.793E+00	7.184E+00
M(t):	2.971E-01	2.975E-01	2.980E-01	2.997E-01	3.048E-01	3.252E-01	3.917E-01	2.874E-01

Maximum TDOSE(t): 1.002E+01 mrem/yr at t = 248.2 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.482E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.669E-07	0.0000	5.671E-08	0.0000	0.000E+00	0.0000	8.192E-04	0.0001	3.971E-06	0.0000	5.210E-06	0.0000	4.353E-05	0.0000
Ra-226	2.274E+00	0.2269	1.655E-04	0.0000	0.000E+00	0.0000	7.597E+00	0.7580	1.369E-02	0.0014	2.652E-02	0.0026	1.096E-01	0.0109
Total	2.274E+00	0.2269	1.655E-04	0.0000	0.000E+00	0.0000	7.598E+00	0.7581	1.370E-02	0.0014	2.653E-02	0.0026	1.096E-01	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.482E+02 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.726E-04	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.002E+01	0.9999
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.002E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.808E-05	0.0000	2.636E-07	0.0000	0.000E+00	0.0000	1.589E+00	0.2139	7.603E-04	0.0001	7.737E-04	0.0001	2.023E-04	0.0000
Ra-226	3.574E-01	0.0481	1.052E-07	0.0000	0.000E+00	0.0000	5.469E+00	0.7362	3.265E-03	0.0004	8.618E-03	0.0012	4.172E-05	0.0000
Total	3.574E-01	0.0481	3.688E-07	0.0000	0.000E+00	0.0000	7.057E+00	0.9500	4.025E-03	0.0005	9.391E-03	0.0013	2.441E-04	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.590E+00	0.2141
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.838E+00	0.7859
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.428E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.758E-05	0.0000	7.692E-07	0.0000	0.000E+00	0.0000	1.541E+00	0.2072	7.698E-04	0.0001	7.941E-04	0.0001	5.904E-04	0.0001
Ra-226	3.600E-01	0.0484	3.371E-07	0.0000	0.000E+00	0.0000	5.522E+00	0.7425	3.305E-03	0.0004	8.679E-03	0.0012	1.416E-04	0.0000
Total	3.600E-01	0.0484	1.106E-06	0.0000	0.000E+00	0.0000	7.063E+00	0.9497	4.075E-03	0.0005	9.473E-03	0.0013	7.321E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E+00	0.2075
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.894E+00	0.7925
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.437E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.661E-05	0.0000	1.688E-06	0.0000	0.000E+00	0.0000	1.450E+00	0.1946	7.853E-04	0.0001	8.292E-04	0.0001	1.295E-03	0.0002
Ra-226	3.654E-01	0.0490	8.922E-07	0.0000	0.000E+00	0.0000	5.619E+00	0.7542	3.376E-03	0.0005	8.798E-03	0.0012	4.119E-04	0.0001
Total	3.654E-01	0.0490	2.580E-06	0.0000	0.000E+00	0.0000	7.069E+00	0.9489	4.162E-03	0.0006	9.627E-03	0.0013	1.707E-03	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.453E+00	0.1950
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.997E+00	0.8050
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.450E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.347E-05	0.0000	4.071E-06	0.0000	0.000E+00	0.0000	1.172E+00	0.1564	8.059E-04	0.0001	9.003E-04	0.0001	3.125E-03	0.0004
Ra-226	3.847E-01	0.0513	3.654E-06	0.0000	0.000E+00	0.0000	5.917E+00	0.7896	3.659E-03	0.0005	9.263E-03	0.0012	1.989E-03	0.0003
Total	3.847E-01	0.0513	7.726E-06	0.0000	0.000E+00	0.0000	7.089E+00	0.9460	4.464E-03	0.0006	1.016E-02	0.0014	5.114E-03	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.177E+00	0.1570
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.317E+00	0.8430
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.493E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.640E-05	0.0000	6.333E-06	0.0000	0.000E+00	0.0000	6.374E-01	0.0836	6.989E-04	0.0001	8.400E-04	0.0001	4.861E-03	0.0006
Ra-226	4.458E-01	0.0585	1.596E-05	0.0000	0.000E+00	0.0000	6.506E+00	0.8537	4.622E-03	0.0006	1.084E-02	0.0014	9.901E-03	0.0013
Total	4.458E-01	0.0585	2.230E-05	0.0000	0.000E+00	0.0000	7.143E+00	0.9373	5.321E-03	0.0007	1.168E-02	0.0015	1.476E-02	0.0019

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.438E-01	0.0845
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.977E+00	0.9155
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.621E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.699E-06	0.0000	2.345E-06	0.0000	0.000E+00	0.0000	7.552E-02	0.0093	1.837E-04	0.0000	2.351E-04	0.0000	1.800E-03	0.0002
Ra-226	7.489E-01	0.0921	6.905E-05	0.0000	0.000E+00	0.0000	7.234E+00	0.8897	8.015E-03	0.0010	1.655E-02	0.0020	4.549E-02	0.0056
Total	7.489E-01	0.0921	7.140E-05	0.0000	0.000E+00	0.0000	7.309E+00	0.8990	8.199E-03	0.0010	1.678E-02	0.0021	4.729E-02	0.0058

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.775E-02	0.0096
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.053E+00	0.9904
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.131E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.177E-07	0.0000	1.130E-08	0.0000	0.000E+00	0.0000	1.625E-04	0.0000	7.912E-07	0.0000	1.038E-06	0.0000	8.674E-06	0.0000
Ra-226	2.213E+00	0.2260	1.626E-04	0.0000	0.000E+00	0.0000	7.432E+00	0.7589	1.344E-02	0.0014	2.602E-02	0.0027	1.077E-01	0.0110
Total	2.213E+00	0.2260	1.626E-04	0.0000	0.000E+00	0.0000	7.432E+00	0.7589	1.344E-02	0.0014	2.602E-02	0.0027	1.077E-01	0.0110

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.732E-04	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.793E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.793E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.769E-17	0.0000	3.619E-18	0.0000	0.000E+00	0.0000	5.203E-14	0.0000	2.534E-16	0.0000	3.324E-16	0.0000	2.778E-15	0.0000
Ra-226	1.624E+00	0.2261	1.193E-04	0.0000	0.000E+00	0.0000	5.452E+00	0.7589	9.864E-03	0.0014	1.909E-02	0.0027	7.905E-02	0.0110
Total	1.624E+00	0.2261	1.193E-04	0.0000	0.000E+00	0.0000	5.452E+00	0.7589	9.864E-03	0.0014	1.909E-02	0.0027	7.905E-02	0.0110

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.544E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.184E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.184E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.590E+00	1.543E+00	1.453E+00	1.177E+00	6.438E-01	7.775E-02	1.732E-04	5.544E-14
Ra-226+D	Ra-226+D	1.000E+00	5.787E+00	5.791E+00	5.801E+00	5.834E+00	5.935E+00	6.369E+00	7.940E+00	5.825E+00
Ra-226+D	Pb-210+D	1.000E+00	5.126E-02	1.024E-01	1.957E-01	4.822E-01	1.041E+00	1.684E+00	1.853E+00	1.359E+00
Ra-226+D	ΣDSR(j)		5.838E+00	5.894E+00	5.997E+00	6.317E+00	6.977E+00	8.053E+00	9.793E+00	7.184E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.572E+01	1.620E+01	1.721E+01	2.125E+01	3.883E+01	3.216E+02	1.444E+05	*7.634E+13	
Ra-226	4.282E+00	4.242E+00	4.169E+00	3.958E+00	3.583E+00	3.104E+00	2.553E+00	3.480E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 248.2 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.590E+00	1.572E+01	8.726E-04	2.865E+04
Ra-226	1.000E+00	248.2 ± 0.5	1.002E+01	2.495E+00	1.002E+01	2.495E+00

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.590E+00	1.543E+00	1.453E+00	1.177E+00	6.438E-01	7.775E-02	1.732E-04	5.544E-14
Pb-210	Ra-226	1.000E+00	5.126E-02	1.024E-01	1.957E-01	4.822E-01	1.041E+00	1.684E+00	1.853E+00	1.359E+00
Pb-210	ΣDOSE(j)		1.642E+00	1.646E+00	1.649E+00	1.659E+00	1.685E+00	1.761E+00	1.853E+00	1.359E+00
Ra-226	Ra-226	1.000E+00	5.787E+00	5.791E+00	5.801E+00	5.834E+00	5.935E+00	6.369E+00	7.940E+00	5.825E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.47 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
Time = 1.000E+02	14
Time = 3.000E+02	15
Time = 1.000E+03	16
Dose/Source Ratios Summed Over All Pathways	17
Single Radionuclide Soil Guidelines	17
Dose Per Nuclide Summed Over All Pathways	18
Soil Concentration Per Nuclide	18

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Ra-226+C CSM

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Attachment 4 to HEM-11-91

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Appendix N

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	10000.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.549E+00	7.559E+00	7.574E+00	7.625E+00	7.774E+00	8.356E+00	1.026E+01	7.525E+00
M(t):	3.020E-01	3.024E-01	3.029E-01	3.050E-01	3.109E-01	3.342E-01	4.103E-01	3.010E-01

Maximum TDOSE(t): 1.049E+01 mrem/yr at t = 248.2 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.482E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.887E-07	0.0000	7.252E-08	0.0000	0.000E+00	0.0000	8.178E-04	0.0001	3.965E-05	0.0000	5.202E-05	0.0000	4.346E-05	0.0000
Ra-226	2.383E+00	0.2271	2.119E-04	0.0000	0.000E+00	0.0000	7.597E+00	0.7240	1.370E-01	0.0131	2.653E-01	0.0253	1.096E-01	0.0104
Total	2.383E+00	0.2271	2.120E-04	0.0000	0.000E+00	0.0000	7.598E+00	0.7241	1.370E-01	0.0131	2.653E-01	0.0253	1.097E-01	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.482E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.536E-04	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.049E+01	0.9999
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.049E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.808E-05	0.0000	3.376E-07	0.0000	0.000E+00	0.0000	1.589E+00	0.2104	7.603E-03	0.0010	7.737E-03	0.0010	2.023E-04	0.0000
Ra-226	3.574E-01	0.0473	1.347E-07	0.0000	0.000E+00	0.0000	5.469E+00	0.7244	3.265E-02	0.0043	8.618E-02	0.0114	4.172E-05	0.0000
Total	3.574E-01	0.0473	4.724E-07	0.0000	0.000E+00	0.0000	7.057E+00	0.9349	4.025E-02	0.0053	9.391E-02	0.0124	2.441E-04	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.604E+00	0.2125
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.945E+00	0.7875
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.549E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.758E-05	0.0000	9.852E-07	0.0000	0.000E+00	0.0000	1.541E+00	0.2039	7.698E-03	0.0010	7.941E-03	0.0011	5.904E-04	0.0001
Ra-226	3.600E-01	0.0476	4.317E-07	0.0000	0.000E+00	0.0000	5.522E+00	0.7305	3.305E-02	0.0044	8.679E-02	0.0115	1.416E-04	0.0000
Total	3.600E-01	0.0476	1.417E-06	0.0000	0.000E+00	0.0000	7.063E+00	0.9343	4.075E-02	0.0054	9.473E-02	0.0125	7.321E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.557E+00	0.2060
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.002E+00	0.7940
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.559E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.661E-05	0.0000	2.162E-06	0.0000	0.000E+00	0.0000	1.450E+00	0.1915	7.853E-03	0.0010	8.292E-03	0.0011	1.295E-03	0.0002
Ra-226	3.654E-01	0.0482	1.143E-06	0.0000	0.000E+00	0.0000	5.619E+00	0.7419	3.376E-02	0.0045	8.798E-02	0.0116	4.119E-04	0.0001
Total	3.654E-01	0.0482	3.304E-06	0.0000	0.000E+00	0.0000	7.069E+00	0.9333	4.162E-02	0.0055	9.627E-02	0.0127	1.707E-03	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.467E+00	0.1938
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.106E+00	0.8062
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.574E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.347E-05	0.0000	5.214E-06	0.0000	0.000E+00	0.0000	1.172E+00	0.1537	8.059E-03	0.0011	9.003E-03	0.0012	3.125E-03	0.0004
Ra-226	3.847E-01	0.0505	4.680E-06	0.0000	0.000E+00	0.0000	5.917E+00	0.7760	3.659E-02	0.0048	9.263E-02	0.0121	1.989E-03	0.0003
Total	3.847E-01	0.0505	9.894E-06	0.0000	0.000E+00	0.0000	7.089E+00	0.9297	4.464E-02	0.0059	1.016E-01	0.0133	5.114E-03	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.192E+00	0.1563
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.433E+00	0.8437
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.625E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.640E-05	0.0000	8.111E-06	0.0000	0.000E+00	0.0000	6.374E-01	0.0820	6.989E-03	0.0009	8.400E-03	0.0011	4.861E-03	0.0006
Ra-226	4.458E-01	0.0573	2.044E-05	0.0000	0.000E+00	0.0000	6.506E+00	0.8369	4.622E-02	0.0059	1.084E-01	0.0139	9.901E-03	0.0013
Total	4.458E-01	0.0574	2.855E-05	0.0000	0.000E+00	0.0000	7.143E+00	0.9189	5.321E-02	0.0068	1.168E-01	0.0150	1.476E-02	0.0019

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.577E-01	0.0846
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.116E+00	0.9154
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.774E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.699E-06	0.0000	3.003E-06	0.0000	0.000E+00	0.0000	7.552E-02	0.0090	1.837E-03	0.0002	2.351E-03	0.0003	1.800E-03	0.0002
Ra-226	7.489E-01	0.0896	8.844E-05	0.0000	0.000E+00	0.0000	7.234E+00	0.8658	8.015E-02	0.0096	1.655E-01	0.0198	4.549E-02	0.0054
Total	7.489E-01	0.0896	9.144E-05	0.0000	0.000E+00	0.0000	7.309E+00	0.8748	8.199E-02	0.0098	1.678E-01	0.0201	4.729E-02	0.0057

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.152E-02	0.0098
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.274E+00	0.9902
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.356E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.240E-07	0.0000	1.447E-08	0.0000	0.000E+00	0.0000	1.625E-04	0.0000	7.912E-06	0.0000	1.038E-05	0.0000	8.674E-06	0.0000
Ra-226	2.323E+00	0.2264	2.083E-04	0.0000	0.000E+00	0.0000	7.432E+00	0.7246	1.344E-01	0.0131	2.602E-01	0.0254	1.077E-01	0.0105
Total	2.323E+00	0.2264	2.083E-04	0.0000	0.000E+00	0.0000	7.432E+00	0.7246	1.344E-01	0.0131	2.602E-01	0.0254	1.077E-01	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.896E-04	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.026E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.026E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.970E-17	0.0000	4.635E-18	0.0000	0.000E+00	0.0000	5.203E-14	0.0000	2.534E-15	0.0000	3.324E-15	0.0000	2.778E-15	0.0000
Ra-226	1.704E+00	0.2265	1.528E-04	0.0000	0.000E+00	0.0000	5.452E+00	0.7245	9.864E-02	0.0131	1.909E-01	0.0254	7.905E-02	0.0105
Total	1.704E+00	0.2265	1.528E-04	0.0000	0.000E+00	0.0000	5.452E+00	0.7245	9.864E-02	0.0131	1.909E-01	0.0254	7.905E-02	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.071E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.525E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.525E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.604E+00	1.557E+00	1.467E+00	1.192E+00	6.577E-01	8.152E-02	1.896E-04	6.071E-14
Ra-226+D	Ra-226+D	1.000E+00	5.892E+00	5.897E+00	5.908E+00	5.944E+00	6.052E+00	6.509E+00	8.230E+00	6.038E+00
Ra-226+D	Pb-210+D	1.000E+00	5.259E-02	1.043E-01	1.986E-01	4.893E-01	1.064E+00	1.765E+00	2.028E+00	1.488E+00
Ra-226+D	ΣDSR(j)		5.945E+00	6.002E+00	6.106E+00	6.433E+00	7.116E+00	8.274E+00	1.026E+01	7.525E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.558E+01	1.605E+01	1.704E+01	2.097E+01	3.801E+01	3.067E+02	1.318E+05	*7.634E+13	
Ra-226	4.205E+00	4.165E+00	4.094E+00	3.886E+00	3.513E+00	3.021E+00	2.437E+00	3.322E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 248.2 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.604E+00	1.558E+01	9.536E-04	2.622E+04
Ra-226	1.000E+00	248.2 ± 0.5	1.049E+01	2.383E+00	1.049E+01	2.383E+00

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.604E+00	1.557E+00	1.467E+00	1.192E+00	6.577E-01	8.152E-02	1.896E-04	6.071E-14
Pb-210	Ra-226	1.000E+00	5.259E-02	1.043E-01	1.986E-01	4.893E-01	1.064E+00	1.765E+00	2.028E+00	1.488E+00
Pb-210	ΣDOSE(j)		1.657E+00	1.662E+00	1.666E+00	1.681E+00	1.722E+00	1.847E+00	2.028E+00	1.488E+00
Ra-226	Ra-226	1.000E+00	5.892E+00	5.897E+00	5.908E+00	5.944E+00	6.052E+00	6.509E+00	8.230E+00	6.038E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.58 seconds

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Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Ra-226+C CSM

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.647E-01	1.656E-01	1.675E-01	1.740E-01	1.944E-01	2.882E-01	5.689E-01	4.174E-01
M(t):	6.589E-03	6.625E-03	6.698E-03	6.962E-03	7.777E-03	1.153E-02	2.276E-02	1.670E-02

Maximum TDOSE(t): 5.884E-01 mrem/yr at t = 247.7 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.577E-07	0.0000	3.023E-08	0.0000	0.000E+00	0.0000	2.495E-06	0.0000	1.208E-08	0.0000	1.584E-08	0.0000	1.324E-07	0.0000
Ra-226	5.651E-01	0.9604	8.684E-05	0.0001	0.000E+00	0.0000	2.279E-02	0.0387	4.103E-05	0.0001	7.947E-05	0.0001	3.282E-04	0.0006
Total	5.651E-01	0.9604	8.687E-05	0.0001	0.000E+00	0.0000	2.279E-02	0.0387	4.105E-05	0.0001	7.949E-05	0.0001	3.283E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.843E-06	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.884E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.884E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.351E-05	0.0001	1.386E-07	0.0000	0.000E+00	0.0000	4.766E-03	0.0289	2.281E-06	0.0000	2.321E-06	0.0000	6.070E-07	0.0000
Ra-226	1.435E-01	0.8711	5.532E-08	0.0000	0.000E+00	0.0000	1.641E-02	0.0996	9.794E-06	0.0001	2.585E-05	0.0002	1.252E-07	0.0000
Total	1.435E-01	0.8712	1.939E-07	0.0000	0.000E+00	0.0000	2.117E-02	0.1285	1.208E-05	0.0001	2.817E-05	0.0002	7.322E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.785E-03	0.0290
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.599E-01	0.9710
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.647E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.325E-05	0.0001	4.045E-07	0.0000	0.000E+00	0.0000	4.623E-03	0.0279	2.309E-06	0.0000	2.382E-06	0.0000	1.771E-06	0.0000
Ra-226	1.444E-01	0.8717	1.772E-07	0.0000	0.000E+00	0.0000	1.657E-02	0.1000	9.915E-06	0.0001	2.604E-05	0.0002	4.249E-07	0.0000
Total	1.444E-01	0.8718	5.817E-07	0.0000	0.000E+00	0.0000	2.119E-02	0.1279	1.222E-05	0.0001	2.842E-05	0.0002	2.196E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.643E-03	0.0280
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.610E-01	0.9720
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.656E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.274E-05	0.0001	8.875E-07	0.0000	0.000E+00	0.0000	4.350E-03	0.0260	2.356E-06	0.0000	2.488E-06	0.0000	3.886E-06	0.0000
Ra-226	1.462E-01	0.8730	4.691E-07	0.0000	0.000E+00	0.0000	1.686E-02	0.1007	1.013E-05	0.0001	2.639E-05	0.0002	1.236E-06	0.0000
Total	1.462E-01	0.8731	1.357E-06	0.0000	0.000E+00	0.0000	2.121E-02	0.1266	1.248E-05	0.0001	2.888E-05	0.0002	5.122E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.372E-03	0.0261
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.631E-01	0.9739
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.675E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.112E-05	0.0001	2.141E-06	0.0000	0.000E+00	0.0000	3.515E-03	0.0202	2.418E-06	0.0000	2.701E-06	0.0000	9.374E-06	0.0001
Ra-226	1.527E-01	0.8774	1.922E-06	0.0000	0.000E+00	0.0000	1.775E-02	0.1020	1.098E-05	0.0001	2.779E-05	0.0002	5.966E-06	0.0000
Total	1.527E-01	0.8774	4.062E-06	0.0000	0.000E+00	0.0000	2.127E-02	0.1222	1.339E-05	0.0001	3.049E-05	0.0002	1.534E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.543E-03	0.0204
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.705E-01	0.9796
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.740E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.545E-06	0.0000	3.330E-06	0.0000	0.000E+00	0.0000	1.912E-03	0.0098	2.097E-06	0.0000	2.520E-06	0.0000	1.458E-05	0.0001
Ra-226	1.729E-01	0.8892	8.393E-06	0.0000	0.000E+00	0.0000	1.952E-02	0.1004	1.387E-05	0.0001	3.252E-05	0.0002	2.970E-05	0.0002
Total	1.729E-01	0.8892	1.172E-05	0.0001	0.000E+00	0.0000	2.143E-02	0.1102	1.596E-05	0.0001	3.504E-05	0.0002	4.429E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.942E-03	0.0100
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.925E-01	0.9900
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.934E-06	0.0000	1.233E-06	0.0000	0.000E+00	0.0000	2.266E-04	0.0008	5.510E-07	0.0000	7.053E-07	0.0000	5.399E-06	0.0000
Ra-226	2.660E-01	0.9230	3.631E-05	0.0001	0.000E+00	0.0000	2.170E-02	0.0753	2.405E-05	0.0001	4.964E-05	0.0002	1.365E-04	0.0005
Total	2.660E-01	0.9230	3.754E-05	0.0001	0.000E+00	0.0000	2.193E-02	0.0761	2.460E-05	0.0001	5.035E-05	0.0002	1.419E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.364E-04	0.0008
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.880E-01	0.9992
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.882E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.170E-08	0.0000	5.942E-09	0.0000	0.000E+00	0.0000	4.876E-07	0.0000	2.374E-09	0.0000	3.114E-09	0.0000	2.602E-08	0.0000
Ra-226	5.461E-01	0.9599	8.550E-05	0.0002	0.000E+00	0.0000	2.230E-02	0.0392	4.033E-05	0.0001	7.806E-05	0.0001	3.231E-04	0.0006
Total	5.461E-01	0.9599	8.551E-05	0.0002	0.000E+00	0.0000	2.230E-02	0.0392	4.033E-05	0.0001	7.806E-05	0.0001	3.232E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.568E-07	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.689E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.689E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.015E-17	0.0000	1.903E-18	0.0000	0.000E+00	0.0000	1.561E-16	0.0000	7.601E-19	0.0000	9.971E-19	0.0000	8.333E-18	0.0000
Ra-226	4.007E-01	0.9599	6.274E-05	0.0002	0.000E+00	0.0000	1.636E-02	0.0392	2.959E-05	0.0001	5.728E-05	0.0001	2.371E-04	0.0006
Total	4.007E-01	0.9599	6.274E-05	0.0002	0.000E+00	0.0000	1.636E-02	0.0392	2.959E-05	0.0001	5.728E-05	0.0001	2.371E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.782E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.174E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.174E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	4.785E-03	4.643E-03	4.372E-03	3.543E-03	1.942E-03	2.364E-04	5.568E-07	1.782E-16
Ra-226+D	Ra-226+D	1.000E+00	1.598E-01	1.607E-01	1.625E-01	1.690E-01	1.893E-01	2.828E-01	5.629E-01	4.131E-01
Ra-226+D	Pb-210+D	1.000E+00	1.540E-04	3.079E-04	5.886E-04	1.452E-03	3.141E-03	5.118E-03	5.951E-03	4.366E-03
Ra-226+D	ΣDSR(j)		1.599E-01	1.610E-01	1.631E-01	1.705E-01	1.925E-01	2.880E-01	5.689E-01	4.174E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	5.225E+03	5.384E+03	5.718E+03	7.056E+03	1.287E+04	1.058E+05	4.490E+07	*7.634E+13	
Ra-226	1.563E+02	1.553E+02	1.533E+02	1.466E+02	1.299E+02	8.682E+01	4.395E+01	5.989E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.7 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	4.785E-03	5.225E+03	2.843E-06	8.792E+06
Ra-226	1.000E+00	247.7 ± 0.5	5.884E-01	4.249E+01	5.884E-01	4.249E+01

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	4.785E-03	4.643E-03	4.372E-03	3.543E-03	1.942E-03	2.364E-04	5.568E-07	1.782E-16
Pb-210	Ra-226	1.000E+00	1.540E-04	3.079E-04	5.886E-04	1.452E-03	3.141E-03	5.118E-03	5.951E-03	4.366E-03
Pb-210	ΣDOSE(j)		4.939E-03	4.951E-03	4.961E-03	4.995E-03	5.084E-03	5.354E-03	5.951E-03	4.366E-03
Ra-226	Ra-226	1.000E+00	1.598E-01	1.607E-01	1.625E-01	1.690E-01	1.893E-01	2.828E-01	5.629E-01	4.131E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.47 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.534E-01	5.559E-01	5.608E-01	5.785E-01	6.336E-01	8.956E-01	1.804E+00	1.323E+00
M(t):	2.214E-02	2.224E-02	2.243E-02	2.314E-02	2.534E-02	3.582E-02	7.214E-02	5.294E-02

Maximum TDOSE(t): 1.860E+00 mrem/yr at t = 247.9 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.252E-07	0.0000	3.883E-08	0.0000	0.000E+00	0.0000	2.476E-05	0.0000	1.199E-07	0.0000	1.574E-07	0.0000	1.315E-06	0.0000
Ra-226	1.627E+00	0.8750	1.124E-04	0.0001	0.000E+00	0.0000	2.279E-01	0.1225	4.106E-04	0.0002	7.952E-04	0.0004	3.285E-03	0.0018
Total	1.627E+00	0.8750	1.125E-04	0.0001	0.000E+00	0.0000	2.279E-01	0.1226	4.107E-04	0.0002	7.954E-04	0.0004	3.286E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.682E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.860E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.860E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.786E-05	0.0001	1.793E-07	0.0000	0.000E+00	0.0000	4.766E-02	0.0861	2.281E-05	0.0000	2.321E-05	0.0000	6.070E-06	0.0000
Ra-226	3.412E-01	0.6166	7.156E-08	0.0000	0.000E+00	0.0000	1.641E-01	0.2965	9.794E-05	0.0002	2.585E-04	0.0005	1.252E-06	0.0000
Total	3.412E-01	0.6167	2.509E-07	0.0000	0.000E+00	0.0000	2.117E-01	0.3826	1.208E-04	0.0002	2.817E-04	0.0005	7.322E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.774E-02	0.0863
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.056E-01	0.9137
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.534E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.735E-05	0.0000	5.232E-07	0.0000	0.000E+00	0.0000	4.623E-02	0.0832	2.309E-05	0.0000	2.382E-05	0.0000	1.771E-05	0.0000
Ra-226	3.435E-01	0.6180	2.292E-07	0.0000	0.000E+00	0.0000	1.657E-01	0.2980	9.915E-05	0.0002	2.604E-04	0.0005	4.249E-06	0.0000
Total	3.436E-01	0.6181	7.525E-07	0.0000	0.000E+00	0.0000	2.119E-01	0.3812	1.222E-04	0.0002	2.842E-04	0.0005	2.196E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.632E-02	0.0833
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.096E-01	0.9167
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.559E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.636E-05	0.0000	1.148E-06	0.0000	0.000E+00	0.0000	4.350E-02	0.0776	2.356E-05	0.0000	2.488E-05	0.0000	3.886E-05	0.0001
Ra-226	3.482E-01	0.6210	6.069E-07	0.0000	0.000E+00	0.0000	1.686E-01	0.3006	1.013E-04	0.0002	2.639E-04	0.0005	1.236E-05	0.0000
Total	3.483E-01	0.6210	1.755E-06	0.0000	0.000E+00	0.0000	2.121E-01	0.3781	1.248E-04	0.0002	2.888E-04	0.0005	5.122E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.361E-02	0.0778
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.172E-01	0.9222
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.608E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.318E-05	0.0000	2.769E-06	0.0000	0.000E+00	0.0000	3.515E-02	0.0608	2.418E-05	0.0000	2.701E-05	0.0000	9.374E-05	0.0002
Ra-226	3.652E-01	0.6313	2.486E-06	0.0000	0.000E+00	0.0000	1.775E-01	0.3069	1.098E-04	0.0002	2.779E-04	0.0005	5.966E-05	0.0001
Total	3.652E-01	0.6313	5.255E-06	0.0000	0.000E+00	0.0000	2.127E-01	0.3676	1.339E-04	0.0002	3.049E-04	0.0005	1.534E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.532E-02	0.0611
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.431E-01	0.9389
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.785E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.604E-05	0.0000	4.308E-06	0.0000	0.000E+00	0.0000	1.912E-02	0.0302	2.097E-05	0.0000	2.520E-05	0.0000	1.458E-04	0.0002
Ra-226	4.183E-01	0.6602	1.086E-05	0.0000	0.000E+00	0.0000	1.952E-01	0.3081	1.387E-04	0.0002	3.252E-04	0.0005	2.970E-04	0.0005
Total	4.183E-01	0.6602	1.516E-05	0.0000	0.000E+00	0.0000	2.143E-01	0.3382	1.596E-04	0.0003	3.504E-04	0.0006	4.429E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.933E-02	0.0305
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.142E-01	0.9695
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.336E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.445E-06	0.0000	1.595E-06	0.0000	0.000E+00	0.0000	2.266E-03	0.0025	5.510E-06	0.0000	7.053E-06	0.0000	5.399E-05	0.0001
Ra-226	6.741E-01	0.7527	4.697E-05	0.0001	0.000E+00	0.0000	2.170E-01	0.2423	2.405E-04	0.0003	4.964E-04	0.0006	1.365E-03	0.0015
Total	6.741E-01	0.7527	4.856E-05	0.0001	0.000E+00	0.0000	2.193E-01	0.2448	2.460E-04	0.0003	5.035E-04	0.0006	1.419E-03	0.0016

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.338E-03	0.0026
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.933E-01	0.9974
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.956E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	8.687E-08	0.0000	7.687E-09	0.0000	0.000E+00	0.0000	4.876E-06	0.0000	2.374E-08	0.0000	3.114E-08	0.0000	2.602E-07	0.0000
Ra-226	1.576E+00	0.8739	1.106E-04	0.0001	0.000E+00	0.0000	2.230E-01	0.1236	4.033E-04	0.0002	7.806E-04	0.0004	3.231E-03	0.0018
Total	1.576E+00	0.8739	1.106E-04	0.0001	0.000E+00	0.0000	2.230E-01	0.1236	4.033E-04	0.0002	7.806E-04	0.0004	3.232E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.286E-06	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.804E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.804E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.782E-17	0.0000	2.462E-18	0.0000	0.000E+00	0.0000	1.561E-15	0.0000	7.601E-18	0.0000	9.971E-18	0.0000	8.333E-17	0.0000
Ra-226	1.157E+00	0.8739	8.116E-05	0.0001	0.000E+00	0.0000	1.636E-01	0.1236	2.959E-04	0.0002	5.728E-04	0.0004	2.371E-03	0.0018
Total	1.157E+00	0.8739	8.116E-05	0.0001	0.000E+00	0.0000	1.636E-01	0.1236	2.959E-04	0.0002	5.728E-04	0.0004	2.371E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.692E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.323E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.323E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	4.774E-02	4.632E-02	4.361E-02	3.532E-02	1.933E-02	2.338E-03	5.286E-06	1.692E-15
Ra-226+D	Ra-226+D	1.000E+00	5.041E-01	5.065E-01	5.113E-01	5.287E-01	5.829E-01	8.426E-01	1.747E+00	1.282E+00
Ra-226+D	Pb-210+D	1.000E+00	1.538E-03	3.073E-03	5.874E-03	1.448E-02	3.127E-02	5.063E-02	5.654E-02	4.148E-02
Ra-226+D	ΣDSR(j)		5.056E-01	5.096E-01	5.172E-01	5.431E-01	6.142E-01	8.933E-01	1.804E+00	1.323E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	5.237E+02	5.397E+02	5.732E+02	7.077E+02	1.293E+03	1.069E+04	4.730E+06	*7.634E+13	
Ra-226	4.944E+01	4.906E+01	4.834E+01	4.603E+01	4.070E+01	2.799E+01	1.386E+01	1.889E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.9 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	4.774E-02	5.237E+02	2.682E-05	9.322E+05
Ra-226	1.000E+00	247.9 ± 0.5	1.860E+00	1.344E+01	1.860E+00	1.344E+01

Summary : Hematite - Root Ra-226+C CSM

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	4.774E-02	4.632E-02	4.361E-02	3.532E-02	1.933E-02	2.338E-03	5.286E-06	1.692E-15
Pb-210	Ra-226	1.000E+00	1.538E-03	3.073E-03	5.874E-03	1.448E-02	3.127E-02	5.063E-02	5.654E-02	4.148E-02
Pb-210	ΣDOSE(j)		4.928E-02	4.940E-02	4.949E-02	4.980E-02	5.061E-02	5.297E-02	5.655E-02	4.148E-02
Ra-226	Ra-226	1.000E+00	5.041E-01	5.065E-01	5.113E-01	5.287E-01	5.829E-01	8.426E-01	1.747E+00	1.282E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.34 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	300.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.479E+00	2.483E+00	2.491E+00	2.517E+00	2.598E+00	2.963E+00	4.385E+00	3.217E+00
M(t):	9.915E-02	9.933E-02	9.962E-02	1.007E-01	1.039E-01	1.185E-01	1.754E-01	1.287E-01

Maximum TDOSE(t): 4.496E+00 mrem/yr at t = 247.9 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.462E-07	0.0000	5.007E-08	0.0000	0.000E+00	0.0000	2.476E-04	0.0001	1.199E-06	0.0000	1.574E-06	0.0000	1.315E-05	0.0000
Ra-226	2.172E+00	0.4831	1.450E-04	0.0000	0.000E+00	0.0000	2.279E+00	0.5069	4.106E-03	0.0009	7.952E-03	0.0018	3.285E-02	0.0073
Total	2.172E+00	0.4831	1.450E-04	0.0000	0.000E+00	0.0000	2.279E+00	0.5069	4.107E-03	0.0009	7.954E-03	0.0018	3.286E-02	0.0073

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.642E-04	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.496E+00	0.9999
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.496E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.808E-05	0.0000	2.312E-07	0.0000	0.000E+00	0.0000	4.766E-01	0.1923	2.281E-04	0.0001	2.321E-04	0.0001	6.070E-05	0.0000
Ra-226	3.574E-01	0.1442	9.227E-08	0.0000	0.000E+00	0.0000	1.641E+00	0.6619	9.794E-04	0.0004	2.585E-03	0.0010	1.252E-05	0.0000
Total	3.574E-01	0.1442	3.235E-07	0.0000	0.000E+00	0.0000	2.117E+00	0.8542	1.208E-03	0.0005	2.817E-03	0.0011	7.322E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.771E-01	0.1925
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.002E+00	0.8075
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.479E+00	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.758E-05	0.0000	6.746E-07	0.0000	0.000E+00	0.0000	4.623E-01	0.1862	2.309E-04	0.0001	2.382E-04	0.0001	1.771E-04	0.0001
Ra-226	3.600E-01	0.1450	2.956E-07	0.0000	0.000E+00	0.0000	1.657E+00	0.6671	9.915E-04	0.0004	2.604E-03	0.0010	4.249E-05	0.0000
Total	3.600E-01	0.1450	9.702E-07	0.0000	0.000E+00	0.0000	2.119E+00	0.8533	1.222E-03	0.0005	2.842E-03	0.0011	2.196E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.630E-01	0.1864
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.020E+00	0.8136
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.483E+00	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.661E-05	0.0000	1.480E-06	0.0000	0.000E+00	0.0000	4.350E-01	0.1747	2.356E-04	0.0001	2.488E-04	0.0001	3.886E-04	0.0002
Ra-226	3.653E-01	0.1467	7.824E-07	0.0000	0.000E+00	0.0000	1.686E+00	0.6768	1.013E-03	0.0004	2.639E-03	0.0011	1.236E-04	0.0000
Total	3.654E-01	0.1467	2.263E-06	0.0000	0.000E+00	0.0000	2.121E+00	0.8514	1.248E-03	0.0005	2.888E-03	0.0012	5.122E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.359E-01	0.1750
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.055E+00	0.8250
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.491E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.347E-05	0.0000	3.570E-06	0.0000	0.000E+00	0.0000	3.515E-01	0.1396	2.418E-04	0.0001	2.701E-04	0.0001	9.374E-04	0.0004
Ra-226	3.846E-01	0.1528	3.205E-06	0.0000	0.000E+00	0.0000	1.775E+00	0.7052	1.098E-03	0.0004	2.779E-03	0.0011	5.966E-04	0.0002
Total	3.846E-01	0.1528	6.775E-06	0.0000	0.000E+00	0.0000	2.127E+00	0.8448	1.339E-03	0.0005	3.049E-03	0.0012	1.534E-03	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.530E-01	0.1402
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.164E+00	0.8598
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.517E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.640E-05	0.0000	5.554E-06	0.0000	0.000E+00	0.0000	1.912E-01	0.0736	2.097E-04	0.0001	2.520E-04	0.0001	1.458E-03	0.0006
Ra-226	4.456E-01	0.1715	1.400E-05	0.0000	0.000E+00	0.0000	1.952E+00	0.7512	1.387E-03	0.0005	3.252E-03	0.0013	2.970E-03	0.0011
Total	4.456E-01	0.1715	1.955E-05	0.0000	0.000E+00	0.0000	2.143E+00	0.8248	1.596E-03	0.0006	3.504E-03	0.0013	4.429E-03	0.0017

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.932E-01	0.0743
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.405E+00	0.9257
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.598E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.699E-06	0.0000	2.056E-06	0.0000	0.000E+00	0.0000	2.266E-02	0.0076	5.510E-05	0.0000	7.053E-05	0.0000	5.399E-04	0.0002
Ra-226	7.480E-01	0.2525	6.056E-05	0.0000	0.000E+00	0.0000	2.170E+00	0.7325	2.405E-03	0.0008	4.964E-03	0.0017	1.365E-02	0.0046
Total	7.480E-01	0.2525	6.261E-05	0.0000	0.000E+00	0.0000	2.193E+00	0.7402	2.460E-03	0.0008	5.035E-03	0.0017	1.419E-02	0.0048

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.333E-02	0.0079
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.939E+00	0.9921
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.963E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.131E-07	0.0000	9.911E-09	0.0000	0.000E+00	0.0000	4.876E-05	0.0000	2.374E-07	0.0000	3.114E-07	0.0000	2.602E-06	0.0000
Ra-226	2.111E+00	0.4814	1.426E-04	0.0000	0.000E+00	0.0000	2.230E+00	0.5085	4.033E-03	0.0009	7.806E-03	0.0018	3.231E-02	0.0074
Total	2.111E+00	0.4814	1.426E-04	0.0000	0.000E+00	0.0000	2.230E+00	0.5085	4.033E-03	0.0009	7.806E-03	0.0018	3.232E-02	0.0074

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.204E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.385E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.385E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.621E-17	0.0000	3.174E-18	0.0000	0.000E+00	0.0000	1.561E-14	0.0000	7.601E-17	0.0000	9.971E-17	0.0000	8.333E-16	0.0000
Ra-226	1.549E+00	0.4815	1.046E-04	0.0000	0.000E+00	0.0000	1.636E+00	0.5084	2.959E-03	0.0009	5.728E-03	0.0018	2.371E-02	0.0074
Total	1.549E+00	0.4815	1.046E-04	0.0000	0.000E+00	0.0000	1.636E+00	0.5084	2.959E-03	0.0009	5.728E-03	0.0018	2.371E-02	0.0074

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.666E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.217E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	4.771E-01	4.630E-01	4.359E-01	3.530E-01	1.932E-01	2.333E-02	5.204E-05	1.666E-14
Ra-226+D	Ra-226+D	1.000E+00	1.986E+00	1.989E+00	1.996E+00	2.020E+00	2.093E+00	2.434E+00	3.828E+00	2.808E+00
Ra-226+D	Pb-210+D	1.000E+00	1.538E-02	3.072E-02	5.871E-02	1.447E-01	3.125E-01	5.052E-01	5.568E-01	4.085E-01
Ra-226+D	ΣDSR(j)		2.002E+00	2.020E+00	2.055E+00	2.164E+00	2.405E+00	2.939E+00	4.385E+00	3.217E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	5.240E+01	5.400E+01	5.735E+01	7.082E+01	1.294E+02	1.072E+03	4.804E+05	*7.634E+13	
Ra-226	1.249E+01	1.238E+01	1.217E+01	1.155E+01	1.040E+01	8.506E+00	5.702E+00	7.771E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.9 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	4.771E-01	5.240E+01	2.642E-04	9.464E+04
Ra-226	1.000E+00	247.9 ± 0.5	4.496E+00	5.560E+00	4.496E+00	5.560E+00

Summary : Hematite - Root Ra-226+C CSM

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	4.771E-01	4.630E-01	4.359E-01	3.530E-01	1.932E-01	2.333E-02	5.204E-05	1.666E-14
Pb-210	Ra-226	1.000E+00	1.538E-02	3.072E-02	5.871E-02	1.447E-01	3.125E-01	5.052E-01	5.568E-01	4.085E-01
Pb-210	ΣDOSE(j)		4.925E-01	4.937E-01	4.946E-01	4.977E-01	5.056E-01	5.285E-01	5.568E-01	4.085E-01
Ra-226	Ra-226	1.000E+00	1.986E+00	1.989E+00	1.996E+00	2.020E+00	2.093E+00	2.434E+00	3.828E+00	2.808E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.53 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.486E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	3000.00 square meters	Pb-210	1.000E+00
Thickness:	1.35 meters	Ra-226	1.000E+00
Cover Depth:	0.15 meters		

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.455E+00	7.464E+00	7.477E+00	7.523E+00	7.655E+00	8.181E+00	9.918E+00	7.276E+00
M(t):	2.982E-01	2.986E-01	2.991E-01	3.009E-01	3.062E-01	3.272E-01	3.967E-01	2.910E-01

Maximum TDOSE(t): 1.015E+01 mrem/yr at t = 248.3 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.483E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.766E-07	0.0000	6.369E-08	0.0000	0.000E+00	0.0000	8.168E-04	0.0001	1.188E-05	0.0000	1.559E-05	0.0000	4.341E-05	0.0000
Ra-226	2.320E+00	0.2286	1.864E-04	0.0000	0.000E+00	0.0000	7.597E+00	0.7486	4.109E-02	0.0040	7.958E-02	0.0078	1.096E-01	0.0108
Total	2.320E+00	0.2286	1.864E-04	0.0000	0.000E+00	0.0000	7.598E+00	0.7487	4.111E-02	0.0041	7.960E-02	0.0078	1.097E-01	0.0108

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.483E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.883E-04	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.015E+01	0.9999
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.015E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.808E-05	0.0000	2.969E-07	0.0000	0.000E+00	0.0000	1.589E+00	0.2131	2.281E-03	0.0003	2.321E-03	0.0003	2.023E-04	0.0000
Ra-226	3.574E-01	0.0479	1.185E-07	0.0000	0.000E+00	0.0000	5.469E+00	0.7335	9.794E-03	0.0013	2.585E-02	0.0035	4.172E-05	0.0000
Total	3.574E-01	0.0479	4.153E-07	0.0000	0.000E+00	0.0000	7.057E+00	0.9466	1.208E-02	0.0016	2.817E-02	0.0038	2.441E-04	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.593E+00	0.2137
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.862E+00	0.7863
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.455E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.758E-05	0.0000	8.662E-07	0.0000	0.000E+00	0.0000	1.541E+00	0.2065	2.309E-03	0.0003	2.382E-03	0.0003	5.904E-04	0.0001
Ra-226	3.600E-01	0.0482	3.795E-07	0.0000	0.000E+00	0.0000	5.522E+00	0.7398	9.915E-03	0.0013	2.604E-02	0.0035	1.416E-04	0.0000
Total	3.600E-01	0.0482	1.246E-06	0.0000	0.000E+00	0.0000	7.063E+00	0.9462	1.222E-02	0.0016	2.842E-02	0.0038	7.321E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.546E+00	0.2072
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.918E+00	0.7928
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.464E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.661E-05	0.0000	1.901E-06	0.0000	0.000E+00	0.0000	1.450E+00	0.1939	2.356E-03	0.0003	2.488E-03	0.0003	1.295E-03	0.0002
Ra-226	3.654E-01	0.0489	1.005E-06	0.0000	0.000E+00	0.0000	5.619E+00	0.7514	1.013E-02	0.0014	2.639E-02	0.0035	4.119E-04	0.0001
Total	3.654E-01	0.0489	2.905E-06	0.0000	0.000E+00	0.0000	7.069E+00	0.9454	1.248E-02	0.0017	2.888E-02	0.0039	1.707E-03	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.456E+00	0.1947
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.021E+00	0.8053
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.477E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.347E-05	0.0000	4.584E-06	0.0000	0.000E+00	0.0000	1.172E+00	0.1558	2.418E-03	0.0003	2.701E-03	0.0004	3.125E-03	0.0004
Ra-226	3.847E-01	0.0511	4.115E-06	0.0000	0.000E+00	0.0000	5.917E+00	0.7866	1.098E-02	0.0015	2.779E-02	0.0037	1.989E-03	0.0003
Total	3.847E-01	0.0511	8.699E-06	0.0000	0.000E+00	0.0000	7.089E+00	0.9423	1.339E-02	0.0018	3.049E-02	0.0041	5.114E-03	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.180E+00	0.1569
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.343E+00	0.8431
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.523E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.640E-05	0.0000	7.132E-06	0.0000	0.000E+00	0.0000	6.374E-01	0.0833	2.097E-03	0.0003	2.520E-03	0.0003	4.861E-03	0.0006
Ra-226	4.458E-01	0.0582	1.797E-05	0.0000	0.000E+00	0.0000	6.506E+00	0.8499	1.387E-02	0.0018	3.252E-02	0.0042	9.901E-03	0.0013
Total	4.458E-01	0.0582	2.511E-05	0.0000	0.000E+00	0.0000	7.143E+00	0.9332	1.596E-02	0.0021	3.504E-02	0.0046	1.476E-02	0.0019

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.469E-01	0.0845
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.008E+00	0.9155
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.655E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.699E-06	0.0000	2.640E-06	0.0000	0.000E+00	0.0000	7.552E-02	0.0092	5.510E-04	0.0001	7.053E-04	0.0001	1.800E-03	0.0002
Ra-226	7.489E-01	0.0915	7.775E-05	0.0000	0.000E+00	0.0000	7.234E+00	0.8843	2.405E-02	0.0029	4.964E-02	0.0061	4.549E-02	0.0056
Total	7.489E-01	0.0915	8.039E-05	0.0000	0.000E+00	0.0000	7.309E+00	0.8935	2.460E-02	0.0030	5.035E-02	0.0062	4.729E-02	0.0058

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.858E-02	0.0096
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.102E+00	0.9904
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.181E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.204E-07	0.0000	1.273E-08	0.0000	0.000E+00	0.0000	1.625E-04	0.0000	2.374E-06	0.0000	3.114E-06	0.0000	8.674E-06	0.0000
Ra-226	2.259E+00	0.2278	1.831E-04	0.0000	0.000E+00	0.0000	7.432E+00	0.7494	4.033E-02	0.0041	7.806E-02	0.0079	1.077E-01	0.0109
Total	2.259E+00	0.2278	1.831E-04	0.0000	0.000E+00	0.0000	7.432E+00	0.7494	4.033E-02	0.0041	7.806E-02	0.0079	1.077E-01	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.768E-04	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.918E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.918E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.855E-17	0.0000	4.075E-18	0.0000	0.000E+00	0.0000	5.203E-14	0.0000	7.601E-16	0.0000	9.971E-16	0.0000	2.778E-15	0.0000
Ra-226	1.658E+00	0.2278	1.344E-04	0.0000	0.000E+00	0.0000	5.452E+00	0.7493	2.959E-02	0.0041	5.728E-02	0.0079	7.905E-02	0.0109
Total	1.658E+00	0.2278	1.344E-04	0.0000	0.000E+00	0.0000	5.452E+00	0.7493	2.959E-02	0.0041	5.728E-02	0.0079	7.905E-02	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.661E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.276E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.276E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Ra-226+C CSM

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.593E+00	1.546E+00	1.456E+00	1.180E+00	6.469E-01	7.858E-02	1.768E-04	5.661E-14
Ra-226+D	Ra-226+D	1.000E+00	5.810E+00	5.815E+00	5.825E+00	5.859E+00	5.961E+00	6.400E+00	8.026E+00	5.888E+00
Ra-226+D	Pb-210+D	1.000E+00	5.156E-02	1.028E-01	1.963E-01	4.838E-01	1.047E+00	1.702E+00	1.892E+00	1.388E+00
Ra-226+D	ΣDSR(j)		5.862E+00	5.918E+00	6.021E+00	6.343E+00	7.008E+00	8.102E+00	9.918E+00	7.276E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.569E+01	1.617E+01	1.717E+01	2.119E+01	3.865E+01	3.181E+02	1.414E+05	*7.634E+13	
Ra-226	4.265E+00	4.225E+00	4.152E+00	3.942E+00	3.567E+00	3.086E+00	2.521E+00	3.436E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 248.3 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.593E+00	1.569E+01	8.883E-04	2.814E+04
Ra-226	1.000E+00	248.3 ± 0.5	1.015E+01	2.464E+00	1.015E+01	2.464E+00

Summary : Hematite - Root Ra-226+C CSM

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.593E+00	1.546E+00	1.456E+00	1.180E+00	6.469E-01	7.858E-02	1.768E-04	5.661E-14
Pb-210	Ra-226	1.000E+00	5.156E-02	1.028E-01	1.963E-01	4.838E-01	1.047E+00	1.702E+00	1.892E+00	1.388E+00
Pb-210	ΣDOSE(j)		1.645E+00	1.649E+00	1.652E+00	1.664E+00	1.693E+00	1.780E+00	1.892E+00	1.388E+00
Ra-226	Ra-226	1.000E+00	5.810E+00	5.815E+00	5.825E+00	5.859E+00	5.961E+00	6.400E+00	8.026E+00	5.888E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.693E-01	9.106E-01	7.318E-01	3.918E-01	4.402E-02	8.529E-05	2.731E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.895E-02	2.664E-01	6.007E-01	9.214E-01	8.840E-01	6.487E-01
Pb-210	ΣS(j):		1.000E+00	9.998E-01	9.995E-01	9.981E-01	9.925E-01	9.654E-01	8.841E-01	6.487E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.868E-01	9.567E-01	8.758E-01	6.426E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.54 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Root Th-232+C CSM - AF 1 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Th-232+C CSM - AF 1 m²

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.181E-01	1.188E-01	1.201E-01	1.251E-01	1.404E-01	2.087E-01	4.125E-01	4.121E-01
M(t):	4.723E-03	4.750E-03	4.806E-03	5.004E-03	5.615E-03	8.348E-03	1.650E-02	1.648E-02

Maximum TDOSE(t): 4.188E-01 mrem/yr at t = 247.5 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.475E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	5.517E-14	0.0000	1.449E-16	0.0000	0.000E+00	0.0000	7.477E-16	0.0000	6.741E-19	0.0000	1.940E-18	0.0000	3.874E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	4.061E-01	0.9696	5.321E-03	0.0127	0.000E+00	0.0000	7.336E-03	0.0175	6.743E-06	0.0000	1.860E-05	0.0000	7.012E-05	0.0002
Total	4.061E-01	0.9696	5.321E-03	0.0127	0.000E+00	0.0000	7.336E-03	0.0175	6.743E-06	0.0000	1.860E-05	0.0000	7.012E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.475E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.607E-14	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.188E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.188E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.528E-02	0.3835	4.015E-07	0.0000	0.000E+00	0.0000	5.614E-03	0.0475	3.312E-06	0.0000	8.807E-06	0.0001	4.244E-08	0.0000
Th-228	6.409E-02	0.5428	1.468E-06	0.0000	0.000E+00	0.0000	3.734E-05	0.0003	2.333E-09	0.0000	3.210E-10	0.0000	1.810E-08	0.0000
Th-232	2.554E-03	0.0216	8.862E-06	0.0001	0.000E+00	0.0000	4.743E-04	0.0040	1.457E-07	0.0000	4.159E-07	0.0000	8.088E-08	0.0000
Total	1.119E-01	0.9479	1.073E-05	0.0001	0.000E+00	0.0000	6.125E-03	0.0519	3.460E-06	0.0000	9.223E-06	0.0001	1.414E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.091E-02	0.4312
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.413E-02	0.5431
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.038E-03	0.0257
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.181E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	5.878E-02	0.4950	2.222E-06	0.0000	0.000E+00	0.0000	4.994E-03	0.0420	2.950E-06	0.0000	7.838E-06	0.0001	1.284E-07	0.0000
Th-228	4.485E-02	0.3777	3.196E-06	0.0000	0.000E+00	0.0000	2.601E-05	0.0002	1.897E-09	0.0000	2.721E-10	0.0000	3.941E-08	0.0000
Th-232	8.948E-03	0.0753	2.678E-05	0.0002	0.000E+00	0.0000	1.112E-03	0.0094	5.195E-07	0.0000	1.411E-06	0.0000	2.564E-07	0.0000
Total	1.126E-01	0.9480	3.219E-05	0.0003	0.000E+00	0.0000	6.131E-03	0.0516	3.471E-06	0.0000	9.250E-06	0.0001	4.242E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.379E-02	0.5371
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.488E-02	0.3779
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.009E-02	0.0850
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.188E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.723E-02	0.5596	7.427E-06	0.0001	0.000E+00	0.0000	3.942E-03	0.0328	2.334E-06	0.0000	6.209E-06	0.0001	2.776E-07	0.0000
Th-228	2.197E-02	0.1829	3.655E-06	0.0000	0.000E+00	0.0000	1.262E-05	0.0001	1.185E-09	0.0000	1.790E-10	0.0000	4.507E-08	0.0000
Th-232	2.471E-02	0.2057	6.403E-05	0.0005	0.000E+00	0.0000	2.187E-03	0.0182	1.162E-06	0.0000	3.116E-06	0.0000	6.672E-07	0.0000
Total	1.139E-01	0.9481	7.512E-05	0.0006	0.000E+00	0.0000	6.141E-03	0.0511	3.498E-06	0.0000	9.325E-06	0.0001	9.899E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.119E-02	0.5925
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.199E-02	0.1830
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.697E-02	0.2245
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.214E-02	0.3368	1.537E-05	0.0001	0.000E+00	0.0000	1.711E-03	0.0137	1.028E-06	0.0000	2.745E-06	0.0000	4.299E-07	0.0000
Th-228	1.807E-03	0.0144	8.732E-07	0.0000	0.000E+00	0.0000	1.005E-06	0.0000	1.676E-10	0.0000	2.724E-11	0.0000	1.077E-08	0.0000
Th-232	7.474E-02	0.5975	2.091E-04	0.0017	0.000E+00	0.0000	4.463E-03	0.0357	2.562E-06	0.0000	6.846E-06	0.0001	2.529E-06	0.0000
Total	1.187E-01	0.9487	2.253E-04	0.0018	0.000E+00	0.0000	6.175E-03	0.0494	3.591E-06	0.0000	9.591E-06	0.0001	2.970E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.387E-02	0.3506
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.809E-03	0.0145
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.943E-02	0.6349
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.251E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.511E-03	0.0321	4.347E-06	0.0000	0.000E+00	0.0000	1.561E-04	0.0011	9.834E-08	0.0000	2.654E-07	0.0000	1.163E-07	0.0000
Th-228	1.436E-06	0.0000	1.811E-09	0.0000	0.000E+00	0.0000	7.276E-10	0.0000	2.696E-13	0.0000	4.603E-14	0.0000	2.233E-11	0.0000
Th-232	1.289E-01	0.9183	6.502E-04	0.0046	0.000E+00	0.0000	6.117E-03	0.0436	3.758E-06	0.0000	1.008E-05	0.0001	8.509E-06	0.0001
Total	1.334E-01	0.9505	6.546E-04	0.0047	0.000E+00	0.0000	6.273E-03	0.0447	3.856E-06	0.0000	1.035E-05	0.0001	8.626E-06	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.672E-03	0.0333
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.439E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.357E-01	0.9667
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.404E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.453E-06	0.0000	3.101E-09	0.0000	0.000E+00	0.0000	3.560E-08	0.0000	2.588E-11	0.0000	7.191E-11	0.0000	8.291E-11	0.0000
Th-228	2.024E-17	0.0000	5.774E-20	0.0000	0.000E+00	0.0000	7.419E-21	0.0000	7.688E-24	0.0000	1.346E-24	0.0000	7.119E-22	0.0000
Th-232	1.999E-01	0.9577	2.157E-03	0.0103	0.000E+00	0.0000	6.615E-03	0.0317	4.785E-06	0.0000	1.301E-05	0.0001	2.842E-05	0.0001
Total	1.999E-01	0.9577	2.157E-03	0.0103	0.000E+00	0.0000	6.615E-03	0.0317	4.785E-06	0.0000	1.301E-05	0.0001	2.842E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.491E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.030E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.087E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.087E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.688E-17	0.0000	2.605E-19	0.0000	0.000E+00	0.0000	1.336E-18	0.0000	1.207E-21	0.0000	3.475E-21	0.0000	6.967E-21	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.996E-01	0.9690	5.364E-03	0.0130	0.000E+00	0.0000	7.346E-03	0.0178	6.770E-06	0.0000	1.868E-05	0.0000	7.068E-05	0.0002
Total	3.996E-01	0.9690	5.364E-03	0.0130	0.000E+00	0.0000	7.346E-03	0.0178	6.770E-06	0.0000	1.868E-05	0.0000	7.068E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.849E-17	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.125E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.125E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.993E-01	0.9690	5.359E-03	0.0130	0.000E+00	0.0000	7.337E-03	0.0178	6.763E-06	0.0000	1.866E-05	0.0000	7.062E-05	0.0002
Total	3.993E-01	0.9690	5.359E-03	0.0130	0.000E+00	0.0000	7.337E-03	0.0178	6.763E-06	0.0000	1.866E-05	0.0000	7.062E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.121E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.121E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	3.904E-02	3.481E-02	2.768E-02	1.241E-02	1.254E-03	4.116E-07	2.924E-17	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.187E-02	2.898E-02	4.351E-02	3.146E-02	3.418E-03	1.080E-06	6.925E-17	0.000E+00
Ra-228+D	ΣDSR(j)		5.091E-02	6.379E-02	7.119E-02	4.387E-02	4.672E-03	1.491E-06	9.849E-17	0.000E+00
Th-228+D	Th-228+D	1.000E+00	6.413E-02	4.488E-02	2.199E-02	1.809E-03	1.439E-06	2.030E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.594E-04	1.774E-04	2.133E-04	3.391E-04	6.984E-04	1.957E-03	4.655E-03	4.651E-03
Th-232	Ra-228+D	1.000E+00	2.382E-03	6.854E-03	1.448E-02	3.154E-02	4.825E-02	7.514E-02	1.580E-01	1.579E-01
Th-232	Th-228+D	1.000E+00	4.971E-04	3.057E-03	1.227E-02	4.755E-02	8.674E-02	1.316E-01	2.498E-01	2.496E-01
Th-232	ΣDSR(j)		3.038E-03	1.009E-02	2.697E-02	7.943E-02	1.357E-01	2.087E-01	4.125E-01	4.121E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	4.911E+02	3.919E+02	3.512E+02	5.699E+02	5.351E+03	1.676E+07	*2.726E+14	*2.726E+14	
Th-228	3.899E+02	5.570E+02	1.137E+03	1.382E+04	1.738E+07	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	8.228E+03	2.478E+03	9.270E+02	3.147E+02	1.842E+02	1.198E+02	6.061E+01	6.067E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 247.5 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.925 ± 0.006	7.120E-02	3.511E+02	5.607E-14	*2.726E+14
Th-228	1.000E+00	0.000E+00	6.413E-02	3.899E+02	0.000E+00	*8.195E+14
Th-232	1.000E+00	247.5 ± 0.5	4.188E-01	5.969E+01	4.188E-01	5.969E+01

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 1 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	3.904E-02	3.481E-02	2.768E-02	1.241E-02	1.254E-03	4.116E-07	2.924E-17	0.000E+00
Ra-228	Th-232	1.000E+00	2.382E-03	6.854E-03	1.448E-02	3.154E-02	4.825E-02	7.514E-02	1.580E-01	1.579E-01
Ra-228	ΣDOSE(j)		4.143E-02	4.167E-02	4.217E-02	4.395E-02	4.950E-02	7.514E-02	1.580E-01	1.579E-01
Th-228	Ra-228	1.000E+00	1.187E-02	2.898E-02	4.351E-02	3.146E-02	3.418E-03	1.080E-06	6.925E-17	0.000E+00
Th-228	Th-228	1.000E+00	6.413E-02	4.488E-02	2.199E-02	1.809E-03	1.439E-06	2.030E-17	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	4.971E-04	3.057E-03	1.227E-02	4.755E-02	8.674E-02	1.316E-01	2.498E-01	2.496E-01
Th-228	ΣDOSE(j)		7.649E-02	7.692E-02	7.777E-02	8.081E-02	9.016E-02	1.316E-01	2.498E-01	2.496E-01
Th-232	Th-232	1.000E+00	1.594E-04	1.774E-04	2.133E-04	3.391E-04	6.984E-04	1.957E-03	4.655E-03	4.651E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.53 seconds

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Summary : Hematite - Root Th-232+C CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Root Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.228E-01	5.257E-01	5.317E-01	5.530E-01	6.190E-01	9.253E-01	1.943E+00	1.941E+00
M(t):	2.091E-02	2.103E-02	2.127E-02	2.212E-02	2.476E-02	3.701E-02	7.771E-02	7.764E-02
Maximum TDOSE(t): 1.964E+00 mrem/yr at t = 247.7 ± 0.5 years								

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-														
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Ra-228	2.506E-13	0.0000	1.837E-16	0.0000	0.000E+00	0.0000	7.315E-15	0.0000	6.596E-18	0.0000	1.898E-17	0.0000	3.792E-17	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.883E+00	0.9586	6.897E-03	0.0035	0.000E+00	0.0000	7.337E-02	0.0374	6.745E-05	0.0000	1.861E-04	0.0001	7.017E-04	0.0004
Total	1.883E+00	0.9586	6.897E-03	0.0035	0.000E+00	0.0000	7.337E-02	0.0374	6.745E-05	0.0000	1.861E-04	0.0001	7.017E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years														
Water Dependent Pathways														
Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.582E-13	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.807E-01	0.3457	5.200E-07	0.0000	0.000E+00	0.0000	5.614E-02	0.1074	3.312E-05	0.0001	8.807E-05	0.0002	4.244E-07	0.0000
Th-228	2.705E-01	0.5175	1.901E-06	0.0000	0.000E+00	0.0000	3.734E-04	0.0007	2.333E-08	0.0000	3.210E-09	0.0000	1.810E-07	0.0000
Th-232	1.014E-02	0.0194	1.148E-05	0.0000	0.000E+00	0.0000	4.743E-03	0.0091	1.457E-06	0.0000	4.159E-06	0.0000	8.088E-07	0.0000
Total	4.614E-01	0.8826	1.390E-05	0.0000	0.000E+00	0.0000	6.125E-02	0.1172	3.460E-05	0.0001	9.223E-05	0.0002	1.414E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.370E-01	0.4533
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.709E-01	0.5182
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.490E-02	0.0285
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.228E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.389E-01	0.4544	2.878E-06	0.0000	0.000E+00	0.0000	4.994E-02	0.0950	2.950E-05	0.0001	7.838E-05	0.0001	1.284E-06	0.0000
Th-228	1.894E-01	0.3602	4.140E-06	0.0000	0.000E+00	0.0000	2.601E-04	0.0005	1.897E-08	0.0000	2.721E-09	0.0000	3.941E-07	0.0000
Th-232	3.595E-02	0.0684	3.468E-05	0.0001	0.000E+00	0.0000	1.112E-02	0.0211	5.195E-06	0.0000	1.411E-05	0.0000	2.564E-06	0.0000
Total	4.643E-01	0.8830	4.170E-05	0.0001	0.000E+00	0.0000	6.131E-02	0.1166	3.471E-05	0.0001	9.250E-05	0.0002	4.242E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.890E-01	0.5496
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.897E-01	0.3607
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.712E-02	0.0896
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.257E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.767E-01	0.5204	9.619E-06	0.0000	0.000E+00	0.0000	3.942E-02	0.0741	2.334E-05	0.0000	6.209E-05	0.0001	2.776E-06	0.0000
Th-228	9.281E-02	0.1746	4.735E-06	0.0000	0.000E+00	0.0000	1.262E-04	0.0002	1.185E-08	0.0000	1.790E-09	0.0000	4.507E-07	0.0000
Th-232	1.005E-01	0.1891	8.294E-05	0.0002	0.000E+00	0.0000	2.187E-02	0.0411	1.162E-05	0.0000	3.116E-05	0.0001	6.672E-06	0.0000
Total	4.700E-01	0.8841	9.729E-05	0.0002	0.000E+00	0.0000	6.141E-02	0.1155	3.498E-05	0.0001	9.325E-05	0.0002	9.899E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.162E-01	0.5947
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.294E-02	0.1748
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.225E-01	0.2305
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.317E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.751E-01	0.3166	1.991E-05	0.0000	0.000E+00	0.0000	1.711E-02	0.0309	1.028E-05	0.0000	2.745E-05	0.0000	4.299E-06	0.0000
Th-228	7.646E-03	0.0138	1.131E-06	0.0000	0.000E+00	0.0000	1.005E-05	0.0000	1.676E-09	0.0000	2.724E-10	0.0000	1.077E-07	0.0000
Th-232	3.080E-01	0.5571	2.708E-04	0.0005	0.000E+00	0.0000	4.463E-02	0.0807	2.562E-05	0.0000	6.846E-05	0.0001	2.529E-05	0.0000
Total	4.907E-01	0.8875	2.919E-04	0.0005	0.000E+00	0.0000	6.175E-02	0.1117	3.591E-05	0.0001	9.591E-05	0.0002	2.970E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.922E-01	0.3476
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.657E-03	0.0138
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.531E-01	0.6385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.530E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.888E-02	0.0305	5.630E-06	0.0000	0.000E+00	0.0000	1.561E-03	0.0025	9.834E-07	0.0000	2.654E-06	0.0000	1.163E-06	0.0000
Th-228	6.107E-06	0.0000	2.346E-09	0.0000	0.000E+00	0.0000	7.276E-09	0.0000	2.696E-12	0.0000	4.603E-13	0.0000	2.233E-10	0.0000
Th-232	5.363E-01	0.8664	8.422E-04	0.0014	0.000E+00	0.0000	6.117E-02	0.0988	3.758E-05	0.0001	1.008E-04	0.0002	8.509E-05	0.0001
Total	5.552E-01	0.8969	8.478E-04	0.0014	0.000E+00	0.0000	6.273E-02	0.1013	3.856E-05	0.0001	1.035E-04	0.0002	8.626E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.045E-02	0.0330
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.117E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.986E-01	0.9670
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.190E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.244E-06	0.0000	4.016E-09	0.0000	0.000E+00	0.0000	3.560E-07	0.0000	2.588E-10	0.0000	7.191E-10	0.0000	8.291E-10	0.0000
Th-228	8.802E-17	0.0000	7.479E-20	0.0000	0.000E+00	0.0000	7.419E-20	0.0000	7.688E-23	0.0000	1.346E-23	0.0000	7.119E-21	0.0000
Th-232	8.559E-01	0.9250	2.793E-03	0.0030	0.000E+00	0.0000	6.615E-02	0.0715	4.785E-05	0.0001	1.301E-04	0.0001	2.842E-04	0.0003
Total	8.559E-01	0.9250	2.793E-03	0.0030	0.000E+00	0.0000	6.615E-02	0.0715	4.785E-05	0.0001	1.301E-04	0.0001	2.842E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.606E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.818E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.253E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.253E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.519E-16	0.0000	3.375E-19	0.0000	0.000E+00	0.0000	1.336E-17	0.0000	1.207E-20	0.0000	3.475E-20	0.0000	6.967E-20	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.861E+00	0.9581	6.947E-03	0.0036	0.000E+00	0.0000	7.346E-02	0.0378	6.770E-05	0.0000	1.868E-04	0.0001	7.068E-04	0.0004
Total	1.861E+00	0.9581	6.947E-03	0.0036	0.000E+00	0.0000	7.346E-02	0.0378	6.770E-05	0.0000	1.868E-04	0.0001	7.068E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.657E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.860E+00	0.9581	6.941E-03	0.0036	0.000E+00	0.0000	7.337E-02	0.0378	6.763E-05	0.0000	1.866E-04	0.0001	7.062E-04	0.0004
Total	1.860E+00	0.9581	6.941E-03	0.0036	0.000E+00	0.0000	7.337E-02	0.0378	6.763E-05	0.0000	1.866E-04	0.0001	7.062E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.941E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.941E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.867E-01	1.663E-01	1.321E-01	5.900E-02	5.908E-03	1.915E-06	1.419E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	5.033E-02	1.226E-01	1.841E-01	1.332E-01	1.454E-02	4.691E-06	3.238E-16	0.000E+00
Ra-228+D	ΣDSR(j)		2.370E-01	2.890E-01	3.162E-01	1.922E-01	2.045E-02	6.606E-06	4.657E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	2.709E-01	1.897E-01	9.294E-02	7.657E-03	6.117E-06	8.818E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.516E-03	1.541E-03	1.593E-03	1.773E-03	2.286E-03	4.086E-03	7.986E-03	7.979E-03
Th-232	Ra-228+D	1.000E+00	1.127E-02	3.263E-02	6.900E-02	1.499E-01	2.272E-01	3.494E-01	7.669E-01	7.662E-01
Th-232	Th-228+D	1.000E+00	2.112E-03	1.296E-02	5.196E-02	2.014E-01	3.690E-01	5.718E-01	1.168E+00	1.167E+00
Th-232	ΣDSR(j)		1.490E-02	4.712E-02	1.225E-01	3.531E-01	5.986E-01	9.253E-01	1.943E+00	1.941E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.055E+02	8.651E+01	7.907E+01	1.301E+02	1.223E+03	3.785E+06	*2.726E+14	*2.726E+14	
Th-228	9.228E+01	1.318E+02	2.690E+02	3.265E+03	4.087E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.678E+03	5.305E+02	2.040E+02	7.081E+01	4.177E+01	2.702E+01	1.287E+01	1.288E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.7 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.783 ± 0.006	3.165E-01	7.900E+01	2.582E-13	9.683E+13
Th-228	1.000E+00	0.000E+00	2.709E-01	9.228E+01	0.000E+00	*8.195E+14
Th-232	1.000E+00	247.7 ± 0.5	1.964E+00	1.273E+01	1.964E+00	1.273E+01

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 10 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.867E-01	1.663E-01	1.321E-01	5.900E-02	5.908E-03	1.915E-06	1.419E-16	0.000E+00
Ra-228	Th-232	1.000E+00	1.127E-02	3.263E-02	6.900E-02	1.499E-01	2.272E-01	3.494E-01	7.669E-01	7.662E-01
Ra-228	ΣDOSE(j)		1.979E-01	1.990E-01	2.011E-01	2.089E-01	2.331E-01	3.494E-01	7.669E-01	7.662E-01
Th-228	Ra-228	1.000E+00	5.033E-02	1.226E-01	1.841E-01	1.332E-01	1.454E-02	4.691E-06	3.238E-16	0.000E+00
Th-228	Th-228	1.000E+00	2.709E-01	1.897E-01	9.294E-02	7.657E-03	6.117E-06	8.818E-17	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	2.112E-03	1.296E-02	5.196E-02	2.014E-01	3.690E-01	5.718E-01	1.168E+00	1.167E+00
Th-228	ΣDOSE(j)		3.234E-01	3.252E-01	3.290E-01	3.423E-01	3.836E-01	5.718E-01	1.168E+00	1.167E+00
Th-232	Th-232	1.000E+00	1.516E-03	1.541E-03	1.593E-03	1.773E-03	2.286E-03	4.086E-03	7.986E-03	7.979E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.79 seconds

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Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
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Summary : Hematite - Root Th-232+C CSM - AF 100 m^2

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Root Th-232+C CSM - AF 100 m²

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Root Th-232+C CSM - AF 100 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Root Th-232+C CSM - AF 100 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Root Th-232+C CSM - AF 100 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	100.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.201E+00	1.206E+00	1.216E+00	1.250E+00	1.356E+00	1.864E+00	3.967E+00	3.963E+00
M(t):	4.806E-02	4.825E-02	4.863E-02	4.999E-02	5.425E-02	7.458E-02	1.587E-01	1.585E-01

Maximum TDOSE(t): 3.989E+00 mrem/yr at t = 247.9 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.187E-13	0.0000	2.305E-16	0.0000	0.000E+00	0.0000	7.100E-14	0.0000	6.404E-17	0.0000	1.843E-16	0.0000	3.684E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.237E+00	0.8114	8.916E-03	0.0022	0.000E+00	0.0000	7.339E-01	0.1840	6.748E-04	0.0002	1.862E-03	0.0005	7.024E-03	0.0018
Total	3.237E+00	0.8114	8.916E-03	0.0022	0.000E+00	0.0000	7.339E-01	0.1840	6.748E-04	0.0002	1.862E-03	0.0005	7.024E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.906E-13	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.989E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.989E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.231E-01	0.1857	6.716E-07	0.0000	0.000E+00	0.0000	5.614E-01	0.4673	3.312E-04	0.0003	8.807E-04	0.0007	4.244E-06	0.0000
Th-228	3.520E-01	0.2930	2.455E-06	0.0000	0.000E+00	0.0000	3.734E-03	0.0031	2.333E-07	0.0000	3.210E-08	0.0000	1.810E-06	0.0000
Th-232	1.246E-02	0.0104	1.482E-05	0.0000	0.000E+00	0.0000	4.743E-02	0.0395	1.457E-05	0.0000	4.159E-05	0.0000	8.088E-06	0.0000
Total	5.876E-01	0.4891	1.795E-05	0.0000	0.000E+00	0.0000	6.125E-01	0.5098	3.460E-04	0.0003	9.223E-04	0.0008	1.414E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.857E-01	0.6540
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.557E-01	0.2961
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.997E-02	0.0499
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 100 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.004E-01	0.2490	3.717E-06	0.0000	0.000E+00	0.0000	4.994E-01	0.4140	2.950E-04	0.0002	7.838E-04	0.0006	1.284E-05	0.0000
Th-228	2.466E-01	0.2044	5.346E-06	0.0000	0.000E+00	0.0000	2.601E-03	0.0022	1.897E-07	0.0000	2.721E-08	0.0000	3.941E-06	0.0000
Th-232	4.470E-02	0.0371	4.479E-05	0.0000	0.000E+00	0.0000	1.112E-01	0.0922	5.195E-05	0.0000	1.411E-04	0.0001	2.564E-05	0.0000
Total	5.917E-01	0.4905	5.385E-05	0.0000	0.000E+00	0.0000	6.131E-01	0.5083	3.471E-04	0.0003	9.250E-04	0.0008	4.242E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.008E-01	0.6639
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.492E-01	0.2066
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.561E-01	0.1295
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.206E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.523E-01	0.2898	1.242E-05	0.0000	0.000E+00	0.0000	3.942E-01	0.3242	2.334E-04	0.0002	6.209E-04	0.0005	2.776E-05	0.0000
Th-228	1.210E-01	0.0996	6.115E-06	0.0000	0.000E+00	0.0000	1.262E-03	0.0010	1.185E-07	0.0000	1.790E-08	0.0000	4.507E-06	0.0000
Th-232	1.267E-01	0.1042	1.071E-04	0.0001	0.000E+00	0.0000	2.187E-01	0.1799	1.162E-04	0.0001	3.116E-04	0.0003	6.672E-05	0.0001
Total	6.001E-01	0.4936	1.257E-04	0.0001	0.000E+00	0.0000	6.141E-01	0.5052	3.498E-04	0.0003	9.325E-04	0.0008	9.899E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.474E-01	0.6148
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.223E-01	0.1006
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.460E-01	0.2846
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.216E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.258E-01	0.1807	2.571E-05	0.0000	0.000E+00	0.0000	1.711E-01	0.1369	1.028E-04	0.0001	2.745E-04	0.0002	4.299E-05	0.0000
Th-228	1.003E-02	0.0080	1.461E-06	0.0000	0.000E+00	0.0000	1.005E-04	0.0001	1.676E-08	0.0000	2.724E-09	0.0000	1.077E-06	0.0000
Th-232	3.944E-01	0.3156	3.498E-04	0.0003	0.000E+00	0.0000	4.463E-01	0.3571	2.562E-04	0.0002	6.846E-04	0.0005	2.529E-04	0.0002
Total	6.303E-01	0.5043	3.770E-04	0.0003	0.000E+00	0.0000	6.175E-01	0.4941	3.591E-04	0.0003	9.591E-04	0.0008	2.970E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.974E-01	0.3180
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.013E-02	0.0081
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.423E-01	0.6739
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.250E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.480E-02	0.0183	7.271E-06	0.0000	0.000E+00	0.0000	1.561E-02	0.0115	9.834E-06	0.0000	2.654E-05	0.0000	1.163E-05	0.0000
Th-228	8.146E-06	0.0000	3.030E-09	0.0000	0.000E+00	0.0000	7.276E-08	0.0000	2.696E-11	0.0000	4.603E-12	0.0000	2.233E-09	0.0000
Th-232	7.008E-01	0.5167	1.088E-03	0.0008	0.000E+00	0.0000	6.117E-01	0.4510	3.758E-04	0.0003	1.008E-03	0.0007	8.509E-04	0.0006
Total	7.256E-01	0.5350	1.095E-03	0.0008	0.000E+00	0.0000	6.273E-01	0.4625	3.856E-04	0.0003	1.035E-03	0.0008	8.626E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.046E-02	0.0298
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.224E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.316E+00	0.9702
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.356E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.753E-06	0.0000	5.186E-09	0.0000	0.000E+00	0.0000	3.560E-06	0.0000	2.588E-09	0.0000	7.191E-09	0.0000	8.291E-09	0.0000
Th-228	1.250E-16	0.0000	9.658E-20	0.0000	0.000E+00	0.0000	7.419E-19	0.0000	7.688E-22	0.0000	1.346E-22	0.0000	7.119E-20	0.0000
Th-232	1.195E+00	0.6408	3.608E-03	0.0019	0.000E+00	0.0000	6.615E-01	0.3548	4.785E-04	0.0003	1.301E-03	0.0007	2.842E-03	0.0015
Total	1.195E+00	0.6408	3.608E-03	0.0019	0.000E+00	0.0000	6.615E-01	0.3548	4.785E-04	0.0003	1.301E-03	0.0007	2.842E-03	0.0015

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.259E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.864E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.864E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.811E-16	0.0000	4.358E-19	0.0000	0.000E+00	0.0000	1.336E-16	0.0000	1.207E-19	0.0000	3.475E-19	0.0000	6.967E-19	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.213E+00	0.8101	8.972E-03	0.0023	0.000E+00	0.0000	7.346E-01	0.1852	6.770E-04	0.0002	1.868E-03	0.0005	7.068E-03	0.0018
Total	3.213E+00	0.8101	8.972E-03	0.0023	0.000E+00	0.0000	7.346E-01	0.1852	6.770E-04	0.0002	1.868E-03	0.0005	7.068E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.163E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.967E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.967E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.211E+00	0.8102	8.964E-03	0.0023	0.000E+00	0.0000	7.337E-01	0.1852	6.763E-04	0.0002	1.866E-03	0.0005	7.062E-03	0.0018
Total	3.211E+00	0.8102	8.964E-03	0.0023	0.000E+00	0.0000	7.337E-01	0.1852	6.763E-04	0.0002	1.866E-03	0.0005	7.062E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.963E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.963E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	7.167E-01	6.369E-01	5.029E-01	2.201E-01	2.083E-02	5.619E-06	3.523E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	6.898E-02	1.640E-01	2.445E-01	1.773E-01	1.964E-02	6.717E-06	5.640E-16	0.000E+00
Ra-228+D	ΣDSR(j)		7.857E-01	8.008E-01	7.474E-01	3.974E-01	4.046E-02	1.234E-05	9.163E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.557E-01	2.492E-01	1.223E-01	1.013E-02	8.224E-06	1.259E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.505E-02	1.511E-02	1.522E-02	1.563E-02	1.677E-02	2.078E-02	2.945E-02	2.942E-02
Th-232	Ra-228+D	1.000E+00	4.196E-02	1.235E-01	2.612E-01	5.577E-01	7.995E-01	1.024E+00	1.902E+00	1.900E+00
Th-232	Th-228+D	1.000E+00	2.954E-03	1.756E-02	6.952E-02	2.690E-01	4.995E-01	8.199E-01	2.036E+00	2.034E+00
Th-232	ΣDSR(j)		5.997E-02	1.561E-01	3.460E-01	8.423E-01	1.316E+00	1.864E+00	3.967E+00	3.963E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	3.182E+01	3.122E+01	3.345E+01	6.291E+01	6.178E+02	2.027E+06	*2.726E+14	*2.726E+14	
Th-228	7.028E+01	1.003E+02	2.044E+02	2.467E+03	3.040E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	4.169E+02	1.601E+02	7.226E+01	2.968E+01	1.900E+01	1.341E+01	6.303E+00	6.309E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 247.9 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.886 ± 0.002	8.011E-01	3.121E+01	4.906E-13	5.096E+13
Th-228	1.000E+00	0.000E+00	3.557E-01	7.028E+01	0.000E+00	*8.195E+14
Th-232	1.000E+00	247.9 ± 0.5	3.989E+00	6.267E+00	3.989E+00	6.267E+00

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 100 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	7.167E-01	6.369E-01	5.029E-01	2.201E-01	2.083E-02	5.619E-06	3.523E-16	0.000E+00
Ra-228	Th-232	1.000E+00	4.196E-02	1.235E-01	2.612E-01	5.577E-01	7.995E-01	1.024E+00	1.902E+00	1.900E+00
Ra-228	ΣDOSE(j)		7.587E-01	7.604E-01	7.641E-01	7.778E-01	8.204E-01	1.024E+00	1.902E+00	1.900E+00
Th-228	Ra-228	1.000E+00	6.898E-02	1.640E-01	2.445E-01	1.773E-01	1.964E-02	6.717E-06	5.640E-16	0.000E+00
Th-228	Th-228	1.000E+00	3.557E-01	2.492E-01	1.223E-01	1.013E-02	8.224E-06	1.259E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	2.954E-03	1.756E-02	6.952E-02	2.690E-01	4.995E-01	8.199E-01	2.036E+00	2.034E+00
Th-228	ΣDOSE(j)		4.277E-01	4.307E-01	4.363E-01	4.564E-01	5.192E-01	8.199E-01	2.036E+00	2.034E+00
Th-232	Th-232	1.000E+00	1.505E-02	1.511E-02	1.522E-02	1.563E-02	1.677E-02	2.078E-02	2.945E-02	2.942E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.75 seconds

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Soil Concentration Per Nuclide	18

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	1000.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.726E+00	6.736E+00	6.755E+00	6.823E+00	7.026E+00	7.878E+00	1.111E+01	1.110E+01
M(t):	2.690E-01	2.695E-01	2.702E-01	2.729E-01	2.810E-01	3.151E-01	4.445E-01	4.440E-01

Maximum TDOSE(t): 1.112E+01 mrem/yr at t = 248.2 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.482E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.619E-13	0.0000	2.881E-16	0.0000	0.000E+00	0.0000	6.893E-13	0.0000	6.219E-16	0.0000	1.790E-15	0.0000	3.579E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.676E+00	0.3305	1.148E-02	0.0010	0.000E+00	0.0000	7.340E+00	0.6599	6.752E-03	0.0006	1.863E-02	0.0017	7.031E-02	0.0063
Total	3.676E+00	0.3305	1.148E-02	0.0010	0.000E+00	0.0000	7.340E+00	0.6599	6.752E-03	0.0006	1.863E-02	0.0017	7.031E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.482E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.157E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.231E-01	0.0332	8.641E-07	0.0000	0.000E+00	0.0000	5.614E+00	0.8346	3.312E-03	0.0005	8.807E-03	0.0013	4.244E-05	0.0000
Th-228	3.520E-01	0.0523	3.159E-06	0.0000	0.000E+00	0.0000	3.734E-02	0.0056	2.333E-06	0.0000	3.210E-07	0.0000	1.810E-05	0.0000
Th-232	1.246E-02	0.0019	1.907E-05	0.0000	0.000E+00	0.0000	4.743E-01	0.0705	1.457E-04	0.0000	4.159E-04	0.0001	8.088E-05	0.0000
Total	5.876E-01	0.0874	2.310E-05	0.0000	0.000E+00	0.0000	6.125E+00	0.9107	3.460E-03	0.0005	9.223E-03	0.0014	1.414E-04	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.849E+00	0.8696
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.894E-01	0.0579
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.874E-01	0.0725
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.726E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.005E-01	0.0446	4.783E-06	0.0000	0.000E+00	0.0000	4.994E+00	0.7413	2.950E-03	0.0004	7.838E-03	0.0012	1.284E-04	0.0000
Th-228	2.467E-01	0.0366	6.879E-06	0.0000	0.000E+00	0.0000	2.601E-02	0.0039	1.897E-06	0.0000	2.721E-07	0.0000	3.941E-05	0.0000
Th-232	4.471E-02	0.0066	5.763E-05	0.0000	0.000E+00	0.0000	1.112E+00	0.1650	5.195E-04	0.0001	1.411E-03	0.0002	2.564E-04	0.0000
Total	5.918E-01	0.0879	6.929E-05	0.0000	0.000E+00	0.0000	6.131E+00	0.9102	3.471E-03	0.0005	9.250E-03	0.0014	4.242E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.305E+00	0.7875
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.727E-01	0.0405
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.159E+00	0.1720
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.736E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.525E-01	0.0522	1.599E-05	0.0000	0.000E+00	0.0000	3.942E+00	0.5835	2.334E-03	0.0003	6.209E-03	0.0009	2.776E-04	0.0000
Th-228	1.211E-01	0.0179	7.868E-06	0.0000	0.000E+00	0.0000	1.262E-02	0.0019	1.185E-06	0.0000	1.790E-07	0.0000	4.507E-05	0.0000
Th-232	1.267E-01	0.0188	1.378E-04	0.0000	0.000E+00	0.0000	2.187E+00	0.3237	1.162E-03	0.0002	3.116E-03	0.0005	6.672E-04	0.0001
Total	6.004E-01	0.0889	1.617E-04	0.0000	0.000E+00	0.0000	6.141E+00	0.9091	3.498E-03	0.0005	9.325E-03	0.0014	9.899E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.303E+00	0.6370
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.338E-01	0.0198
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.319E+00	0.3432
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.755E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.262E-01	0.0332	3.309E-05	0.0000	0.000E+00	0.0000	1.711E+00	0.2508	1.028E-03	0.0002	2.745E-03	0.0004	4.299E-04	0.0001
Th-228	1.005E-02	0.0015	1.879E-06	0.0000	0.000E+00	0.0000	1.005E-03	0.0001	1.676E-07	0.0000	2.724E-08	0.0000	1.077E-05	0.0000
Th-232	3.950E-01	0.0579	4.501E-04	0.0001	0.000E+00	0.0000	4.463E+00	0.6541	2.562E-03	0.0004	6.846E-03	0.0010	2.529E-03	0.0004
Total	6.313E-01	0.0925	4.850E-04	0.0001	0.000E+00	0.0000	6.175E+00	0.9050	3.591E-03	0.0005	9.591E-03	0.0014	2.970E-03	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.942E+00	0.2846
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.106E-02	0.0016
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.870E+00	0.7138
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.823E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.492E-02	0.0035	9.356E-06	0.0000	0.000E+00	0.0000	1.561E-01	0.0222	9.834E-05	0.0000	2.654E-04	0.0000	1.163E-04	0.0000
Th-228	8.186E-06	0.0000	3.898E-09	0.0000	0.000E+00	0.0000	7.276E-07	0.0000	2.696E-10	0.0000	4.603E-11	0.0000	2.233E-08	0.0000
Th-232	7.040E-01	0.1002	1.399E-03	0.0002	0.000E+00	0.0000	6.117E+00	0.8706	3.758E-03	0.0005	1.008E-02	0.0014	8.509E-03	0.0012
Total	7.290E-01	0.1038	1.409E-03	0.0002	0.000E+00	0.0000	6.273E+00	0.8928	3.856E-03	0.0005	1.035E-02	0.0015	8.626E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E-01	0.0258
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.940E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.845E+00	0.9742
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.026E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.883E-06	0.0000	6.674E-09	0.0000	0.000E+00	0.0000	3.560E-05	0.0000	2.588E-08	0.0000	7.191E-08	0.0000	8.291E-08	0.0000
Th-228	1.269E-16	0.0000	1.243E-19	0.0000	0.000E+00	0.0000	7.419E-18	0.0000	7.688E-21	0.0000	1.346E-21	0.0000	7.119E-19	0.0000
Th-232	1.212E+00	0.1538	4.642E-03	0.0006	0.000E+00	0.0000	6.615E+00	0.8397	4.785E-03	0.0006	1.301E-02	0.0017	2.842E-02	0.0036
Total	1.212E+00	0.1538	4.642E-03	0.0006	0.000E+00	0.0000	6.615E+00	0.8397	4.785E-03	0.0006	1.301E-02	0.0017	2.842E-02	0.0036

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.468E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.352E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.878E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.878E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.897E-16	0.0000	5.608E-19	0.0000	0.000E+00	0.0000	1.336E-15	0.0000	1.207E-18	0.0000	3.475E-18	0.0000	6.967E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.658E+00	0.3292	1.154E-02	0.0010	0.000E+00	0.0000	7.346E+00	0.6611	6.770E-03	0.0006	1.868E-02	0.0017	7.068E-02	0.0064
Total	3.658E+00	0.3292	1.154E-02	0.0010	0.000E+00	0.0000	7.346E+00	0.6611	6.770E-03	0.0006	1.868E-02	0.0017	7.068E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.238E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.111E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.111E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.655E+00	0.3293	1.153E-02	0.0010	0.000E+00	0.0000	7.337E+00	0.6610	6.763E-03	0.0006	1.866E-02	0.0017	7.062E-02	0.0064
Total	3.655E+00	0.3293	1.153E-02	0.0010	0.000E+00	0.0000	7.337E+00	0.6610	6.763E-03	0.0006	1.866E-02	0.0017	7.062E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.110E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.110E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	5.744E+00	5.097E+00	4.013E+00	1.738E+00	1.593E-01	3.726E-05	1.570E-15	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.051E-01	2.082E-01	2.900E-01	2.034E-01	2.224E-02	7.418E-06	6.672E-16	0.000E+00
Ra-228+D	ΣDSR(j)		5.849E+00	5.305E+00	4.303E+00	1.942E+00	1.815E-01	4.468E-05	2.238E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.894E-01	2.727E-01	1.338E-01	1.106E-02	8.940E-06	1.352E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.504E-01	1.507E-01	1.513E-01	1.535E-01	1.598E-01	1.819E-01	2.291E-01	2.288E-01
Th-232	Ra-228+D	1.000E+00	3.320E-01	9.833E-01	2.080E+00	4.398E+00	6.108E+00	6.779E+00	8.461E+00	8.451E+00
Th-232	Th-228+D	1.000E+00	5.084E-03	2.475E-02	8.775E-02	3.185E-01	5.773E-01	9.177E-01	2.422E+00	2.420E+00
Th-232	ΣDSR(j)		4.874E-01	1.159E+00	2.319E+00	4.870E+00	6.845E+00	7.878E+00	1.111E+01	1.110E+01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	4.274E+00	4.713E+00	5.810E+00	1.288E+01	1.377E+02	5.596E+05	*2.726E+14	*2.726E+14	
Th-228	6.421E+01	9.167E+01	1.869E+02	2.260E+03	2.796E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	5.129E+01	2.157E+01	1.078E+01	5.133E+00	3.653E+00	3.173E+00	2.250E+00	2.252E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 248.2 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	5.849E+00	4.274E+00	1.157E-12	2.160E+13
Th-228	1.000E+00	0.000E+00	3.894E-01	6.421E+01	0.000E+00	*8.195E+14
Th-232	1.000E+00	248.2 ± 0.5	1.112E+01	2.248E+00	1.112E+01	2.248E+00

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 1,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	5.744E+00	5.097E+00	4.013E+00	1.738E+00	1.593E-01	3.726E-05	1.570E-15	0.000E+00
Ra-228	Th-232	1.000E+00	3.320E-01	9.833E-01	2.080E+00	4.398E+00	6.108E+00	6.779E+00	8.461E+00	8.451E+00
Ra-228	ΣDOSE(j)		6.076E+00	6.080E+00	6.093E+00	6.137E+00	6.267E+00	6.779E+00	8.461E+00	8.451E+00
Th-228	Ra-228	1.000E+00	1.051E-01	2.082E-01	2.900E-01	2.034E-01	2.224E-02	7.418E-06	6.672E-16	0.000E+00
Th-228	Th-228	1.000E+00	3.894E-01	2.727E-01	1.338E-01	1.106E-02	8.940E-06	1.352E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	5.084E-03	2.475E-02	8.775E-02	3.185E-01	5.773E-01	9.177E-01	2.422E+00	2.420E+00
Th-228	ΣDOSE(j)		4.995E-01	5.057E-01	5.116E-01	5.329E-01	5.995E-01	9.177E-01	2.422E+00	2.420E+00
Th-232	Th-232	1.000E+00	1.504E-01	1.507E-01	1.513E-01	1.535E-01	1.598E-01	1.819E-01	2.291E-01	2.288E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.50 seconds

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Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10000.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.840E+00	6.851E+00	6.871E+00	6.942E+00	7.154E+00	8.040E+00	1.152E+01	1.151E+01
M(t):	2.736E-01	2.740E-01	2.748E-01	2.777E-01	2.862E-01	3.216E-01	4.610E-01	4.605E-01

Maximum TDOSE(t): 1.153E+01 mrem/yr at t = 248.4 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.484E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.725E-13	0.0000	3.609E-16	0.0000	0.000E+00	0.0000	6.739E-13	0.0000	6.081E-15	0.0000	1.751E-14	0.0000	3.501E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.848E+00	0.3338	1.472E-02	0.0013	0.000E+00	0.0000	7.341E+00	0.6368	6.754E-02	0.0059	1.863E-01	0.0162	7.036E-02	0.0061
Total	3.848E+00	0.3338	1.472E-02	0.0013	0.000E+00	0.0000	7.341E+00	0.6368	6.754E-02	0.0059	1.863E-01	0.0162	7.036E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 2.484E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.174E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.231E-01	0.0326	1.107E-06	0.0000	0.000E+00	0.0000	5.614E+00	0.8207	3.312E-02	0.0048	8.807E-02	0.0129	4.244E-05	0.0000
Th-228	3.520E-01	0.0515	4.046E-06	0.0000	0.000E+00	0.0000	3.734E-02	0.0055	2.333E-05	0.0000	3.210E-06	0.0000	1.810E-05	0.0000
Th-232	1.246E-02	0.0018	2.443E-05	0.0000	0.000E+00	0.0000	4.743E-01	0.0693	1.457E-03	0.0002	4.159E-03	0.0006	8.088E-05	0.0000
Total	5.876E-01	0.0859	2.958E-05	0.0000	0.000E+00	0.0000	6.125E+00	0.8955	3.460E-02	0.0051	9.223E-02	0.0135	1.414E-04	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.958E+00	0.8711
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.894E-01	0.0569
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.925E-01	0.0720
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.840E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.005E-01	0.0439	6.125E-06	0.0000	0.000E+00	0.0000	4.994E+00	0.7289	2.950E-02	0.0043	7.838E-02	0.0114	1.284E-04	0.0000
Th-228	2.467E-01	0.0360	8.810E-06	0.0000	0.000E+00	0.0000	2.601E-02	0.0038	1.897E-05	0.0000	2.721E-06	0.0000	3.941E-05	0.0000
Th-232	4.471E-02	0.0065	7.381E-05	0.0000	0.000E+00	0.0000	1.112E+00	0.1623	5.195E-03	0.0008	1.411E-02	0.0021	2.564E-04	0.0000
Total	5.918E-01	0.0864	8.874E-05	0.0000	0.000E+00	0.0000	6.131E+00	0.8950	3.471E-02	0.0051	9.250E-02	0.0135	4.242E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.402E+00	0.7885
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.727E-01	0.0398
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.176E+00	0.1717
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.851E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.525E-01	0.0513	2.047E-05	0.0000	0.000E+00	0.0000	3.942E+00	0.5737	2.334E-02	0.0034	6.209E-02	0.0090	2.776E-04	0.0000
Th-228	1.211E-01	0.0176	1.008E-05	0.0000	0.000E+00	0.0000	1.262E-02	0.0018	1.185E-05	0.0000	1.790E-06	0.0000	4.507E-05	0.0000
Th-232	1.267E-01	0.0184	1.765E-04	0.0000	0.000E+00	0.0000	2.187E+00	0.3183	1.162E-02	0.0017	3.116E-02	0.0045	6.672E-04	0.0001
Total	6.004E-01	0.0874	2.071E-04	0.0000	0.000E+00	0.0000	6.141E+00	0.8938	3.498E-02	0.0051	9.325E-02	0.0136	9.899E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.380E+00	0.6375
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.338E-01	0.0195
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.357E+00	0.3431
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.871E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.262E-01	0.0326	4.237E-05	0.0000	0.000E+00	0.0000	1.711E+00	0.2465	1.028E-02	0.0015	2.745E-02	0.0040	4.299E-04	0.0001
Th-228	1.005E-02	0.0014	2.407E-06	0.0000	0.000E+00	0.0000	1.005E-03	0.0001	1.676E-06	0.0000	2.724E-07	0.0000	1.077E-05	0.0000
Th-232	3.950E-01	0.0569	5.764E-04	0.0001	0.000E+00	0.0000	4.463E+00	0.6429	2.562E-02	0.0037	6.846E-02	0.0099	2.529E-03	0.0004
Total	6.313E-01	0.0909	6.212E-04	0.0001	0.000E+00	0.0000	6.175E+00	0.8896	3.591E-02	0.0052	9.591E-02	0.0138	2.970E-03	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.976E+00	0.2846
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.107E-02	0.0016
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.955E+00	0.7138
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.942E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.492E-02	0.0035	1.198E-05	0.0000	0.000E+00	0.0000	1.561E-01	0.0218	9.834E-04	0.0001	2.654E-03	0.0004	1.163E-04	0.0000
Th-228	8.186E-06	0.0000	4.993E-09	0.0000	0.000E+00	0.0000	7.276E-07	0.0000	2.696E-09	0.0000	4.603E-10	0.0000	2.233E-08	0.0000
Th-232	7.040E-01	0.0984	1.792E-03	0.0003	0.000E+00	0.0000	6.117E+00	0.8550	3.758E-02	0.0053	1.008E-01	0.0141	8.509E-03	0.0012
Total	7.290E-01	0.1019	1.804E-03	0.0003	0.000E+00	0.0000	6.273E+00	0.8768	3.856E-02	0.0054	1.035E-01	0.0145	8.626E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.848E-01	0.0258
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.944E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.970E+00	0.9742
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.154E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.883E-06	0.0000	8.547E-09	0.0000	0.000E+00	0.0000	3.560E-05	0.0000	2.588E-07	0.0000	7.191E-07	0.0000	8.291E-08	0.0000
Th-228	1.269E-16	0.0000	1.592E-19	0.0000	0.000E+00	0.0000	7.419E-18	0.0000	7.688E-20	0.0000	1.346E-20	0.0000	7.119E-19	0.0000
Th-232	1.212E+00	0.1508	5.945E-03	0.0007	0.000E+00	0.0000	6.615E+00	0.8228	4.785E-02	0.0060	1.301E-01	0.0162	2.842E-02	0.0035
Total	1.212E+00	0.1508	5.945E-03	0.0007	0.000E+00	0.0000	6.615E+00	0.8228	4.785E-02	0.0060	1.301E-01	0.0162	2.842E-02	0.0035

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.556E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.353E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.040E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.040E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.334E-16	0.0000	7.182E-19	0.0000	0.000E+00	0.0000	1.336E-15	0.0000	1.207E-17	0.0000	3.475E-17	0.0000	6.967E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.839E+00	0.3331	1.478E-02	0.0013	0.000E+00	0.0000	7.346E+00	0.6374	6.770E-02	0.0059	1.868E-01	0.0162	7.068E-02	0.0061
Total	3.839E+00	0.3331	1.478E-02	0.0013	0.000E+00	0.0000	7.346E+00	0.6374	6.770E-02	0.0059	1.868E-01	0.0162	7.068E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.324E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.152E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.152E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.835E+00	0.3331	1.477E-02	0.0013	0.000E+00	0.0000	7.337E+00	0.6374	6.763E-02	0.0059	1.866E-01	0.0162	7.062E-02	0.0061
Total	3.835E+00	0.3331	1.477E-02	0.0013	0.000E+00	0.0000	7.337E+00	0.6374	6.763E-02	0.0059	1.866E-01	0.0162	7.062E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.151E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.151E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	5.852E+00	5.193E+00	4.090E+00	1.772E+00	1.625E-01	3.813E-05	1.625E-15	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.055E-01	2.086E-01	2.904E-01	2.035E-01	2.226E-02	7.428E-06	6.989E-16	0.000E+00
Ra-228+D	ΣDSR(j)		5.958E+00	5.402E+00	4.380E+00	1.976E+00	1.848E-01	4.556E-05	2.324E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.894E-01	2.727E-01	1.338E-01	1.107E-02	8.944E-06	1.353E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.505E-01	1.508E-01	1.515E-01	1.539E-01	1.608E-01	1.847E-01	2.360E-01	2.358E-01
Th-232	Ra-228+D	1.000E+00	3.369E-01	1.001E+00	2.118E+00	4.482E+00	6.231E+00	6.936E+00	8.752E+00	8.742E+00
Th-232	Th-228+D	1.000E+00	5.103E-03	2.482E-02	8.791E-02	3.189E-01	5.780E-01	9.190E-01	2.536E+00	2.534E+00
Th-232	ΣDSR(j)		4.925E-01	1.176E+00	2.357E+00	4.955E+00	6.970E+00	8.040E+00	1.152E+01	1.151E+01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	4.196E+00	4.628E+00	5.708E+00	1.265E+01	1.353E+02	5.488E+05	*2.726E+14	*2.726E+14	
Th-228	6.420E+01	9.166E+01	1.868E+02	2.259E+03	2.795E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	5.076E+01	2.126E+01	1.061E+01	5.045E+00	3.587E+00	3.110E+00	2.169E+00	2.172E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 248.4 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	5.958E+00	4.196E+00	1.174E-12	2.130E+13
Th-228	1.000E+00	0.000E+00	3.894E-01	6.420E+01	0.000E+00	*8.195E+14
Th-232	1.000E+00	248.4 ± 0.5	1.153E+01	2.169E+00	1.153E+01	2.169E+00

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 10,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	5.852E+00	5.193E+00	4.090E+00	1.772E+00	1.625E-01	3.813E-05	1.625E-15	0.000E+00
Ra-228	Th-232	1.000E+00	3.369E-01	1.001E+00	2.118E+00	4.482E+00	6.231E+00	6.936E+00	8.752E+00	8.742E+00
Ra-228	ΣDOSE(j)		6.189E+00	6.194E+00	6.207E+00	6.254E+00	6.393E+00	6.936E+00	8.752E+00	8.742E+00
Th-228	Ra-228	1.000E+00	1.055E-01	2.086E-01	2.904E-01	2.035E-01	2.226E-02	7.428E-06	6.989E-16	0.000E+00
Th-228	Th-228	1.000E+00	3.894E-01	2.727E-01	1.338E-01	1.107E-02	8.944E-06	1.353E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	5.103E-03	2.482E-02	8.791E-02	3.189E-01	5.780E-01	9.190E-01	2.536E+00	2.534E+00
Th-228	ΣDOSE(j)		5.000E-01	5.062E-01	5.121E-01	5.335E-01	6.003E-01	9.190E-01	2.536E+00	2.534E+00
Th-232	Th-232	1.000E+00	1.505E-01	1.508E-01	1.515E-01	1.539E-01	1.608E-01	1.847E-01	2.360E-01	2.358E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.69 seconds

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Summary : Hematite - Root Th-232+C CSM - AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Root Th-232+C CSM - AF 3 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Root Th-232+C CSM - AF 3 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Th-232+C CSM - AF 3 m^2

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.487E-01	2.501E-01	2.530E-01	2.635E-01	2.959E-01	4.444E-01	9.230E-01	9.221E-01
M(t):	9.947E-03	1.001E-02	1.012E-02	1.054E-02	1.183E-02	1.778E-02	3.692E-02	3.689E-02

Maximum TDOSE(t): 9.344E-01 mrem/yr at t = 247.7 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.208E-13	0.0000	1.607E-16	0.0000	0.000E+00	0.0000	2.198E-15	0.0000	1.982E-18	0.0000	5.705E-18	0.0000	1.139E-17	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	9.061E-01	0.9697	6.026E-03	0.0064	0.000E+00	0.0000	2.201E-02	0.0236	2.023E-05	0.0000	5.583E-05	0.0001	2.105E-04	0.0002
Total	9.061E-01	0.9697	6.026E-03	0.0064	0.000E+00	0.0000	2.201E-02	0.0236	2.023E-05	0.0000	5.583E-05	0.0001	2.105E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.231E-13	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.344E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.344E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.114E-02	0.3665	4.544E-07	0.0000	0.000E+00	0.0000	1.684E-02	0.0677	9.937E-06	0.0000	2.642E-05	0.0001	1.273E-07	0.0000
Th-228	1.340E-01	0.5388	1.661E-06	0.0000	0.000E+00	0.0000	1.120E-04	0.0005	6.999E-09	0.0000	9.631E-10	0.0000	5.429E-08	0.0000
Th-232	5.123E-03	0.0206	1.003E-05	0.0000	0.000E+00	0.0000	1.423E-03	0.0057	4.370E-07	0.0000	1.248E-06	0.0000	2.426E-07	0.0000
Total	2.303E-01	0.9259	1.214E-05	0.0000	0.000E+00	0.0000	1.838E-02	0.0739	1.038E-05	0.0000	2.767E-05	0.0001	4.242E-07	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.080E-01	0.4344
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.341E-01	0.5393
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.558E-03	0.0264
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.487E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.198E-01	0.4789	2.515E-06	0.0000	0.000E+00	0.0000	1.498E-02	0.0599	8.849E-06	0.0000	2.352E-05	0.0001	3.853E-07	0.0000
Th-228	9.379E-02	0.3750	3.617E-06	0.0000	0.000E+00	0.0000	7.803E-05	0.0003	5.691E-09	0.0000	8.163E-10	0.0000	1.182E-07	0.0000
Th-232	1.809E-02	0.0723	3.030E-05	0.0001	0.000E+00	0.0000	3.336E-03	0.0133	1.558E-06	0.0000	4.233E-06	0.0000	7.691E-07	0.0000
Total	2.317E-01	0.9262	3.643E-05	0.0001	0.000E+00	0.0000	1.839E-02	0.0735	1.041E-05	0.0000	2.775E-05	0.0001	1.273E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.348E-01	0.5389
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.387E-02	0.3753
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.146E-02	0.0858
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.501E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.381E-01	0.5459	8.405E-06	0.0000	0.000E+00	0.0000	1.183E-02	0.0467	7.002E-06	0.0000	1.863E-05	0.0001	8.327E-07	0.0000
Th-228	4.595E-02	0.1816	4.137E-06	0.0000	0.000E+00	0.0000	3.787E-05	0.0001	3.556E-09	0.0000	5.370E-10	0.0000	1.352E-07	0.0000
Th-232	5.039E-02	0.1991	7.247E-05	0.0003	0.000E+00	0.0000	6.560E-03	0.0259	3.487E-06	0.0000	9.349E-06	0.0000	2.002E-06	0.0000
Total	2.345E-01	0.9267	8.501E-05	0.0003	0.000E+00	0.0000	1.842E-02	0.0728	1.049E-05	0.0000	2.798E-05	0.0001	2.970E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-01	0.5928
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.600E-02	0.1818
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.704E-02	0.2254
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.530E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.714E-02	0.3307	1.740E-05	0.0001	0.000E+00	0.0000	5.134E-03	0.0195	3.084E-06	0.0000	8.234E-06	0.0000	1.290E-06	0.0000
Th-228	3.784E-03	0.0144	9.882E-07	0.0000	0.000E+00	0.0000	3.014E-06	0.0000	5.027E-10	0.0000	8.172E-11	0.0000	3.230E-08	0.0000
Th-232	1.537E-01	0.5835	2.366E-04	0.0009	0.000E+00	0.0000	1.339E-02	0.0508	7.687E-06	0.0000	2.054E-05	0.0001	7.587E-06	0.0000
Total	2.447E-01	0.9285	2.550E-04	0.0010	0.000E+00	0.0000	1.853E-02	0.0703	1.077E-05	0.0000	2.877E-05	0.0001	8.909E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.230E-02	0.3503
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.788E-03	0.0144
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.674E-01	0.6353
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.635E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.375E-03	0.0317	4.920E-06	0.0000	0.000E+00	0.0000	4.683E-04	0.0016	2.950E-07	0.0000	7.962E-07	0.0000	3.489E-07	0.0000
Th-228	3.017E-06	0.0000	2.050E-09	0.0000	0.000E+00	0.0000	2.183E-09	0.0000	8.088E-13	0.0000	1.381E-13	0.0000	6.700E-11	0.0000
Th-232	2.668E-01	0.9020	7.359E-04	0.0025	0.000E+00	0.0000	1.835E-02	0.0620	1.127E-05	0.0000	3.025E-05	0.0001	2.553E-05	0.0001
Total	2.762E-01	0.9337	7.408E-04	0.0025	0.000E+00	0.0000	1.882E-02	0.0636	1.157E-05	0.0000	3.105E-05	0.0001	2.588E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.849E-03	0.0333
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.022E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.860E-01	0.9667
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.959E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.075E-06	0.0000	3.509E-09	0.0000	0.000E+00	0.0000	1.068E-07	0.0000	7.765E-11	0.0000	2.157E-10	0.0000	2.487E-10	0.0000
Th-228	4.319E-17	0.0000	6.535E-20	0.0000	0.000E+00	0.0000	2.226E-20	0.0000	2.306E-23	0.0000	4.037E-24	0.0000	2.136E-21	0.0000
Th-232	4.220E-01	0.9495	2.441E-03	0.0055	0.000E+00	0.0000	1.985E-02	0.0447	1.436E-05	0.0000	3.902E-05	0.0001	8.526E-05	0.0002
Total	4.220E-01	0.9495	2.441E-03	0.0055	0.000E+00	0.0000	1.985E-02	0.0447	1.436E-05	0.0000	3.902E-05	0.0001	8.526E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.186E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.328E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.444E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.444E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.171E-16	0.0000	2.949E-19	0.0000	0.000E+00	0.0000	4.007E-18	0.0000	3.622E-21	0.0000	1.043E-20	0.0000	2.090E-20	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.946E-01	0.9692	6.070E-03	0.0066	0.000E+00	0.0000	2.204E-02	0.0239	2.031E-05	0.0000	5.603E-05	0.0001	2.120E-04	0.0002
Total	8.946E-01	0.9692	6.070E-03	0.0066	0.000E+00	0.0000	2.204E-02	0.0239	2.031E-05	0.0000	5.603E-05	0.0001	2.120E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.214E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.230E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.230E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.938E-01	0.9692	6.065E-03	0.0066	0.000E+00	0.0000	2.201E-02	0.0239	2.029E-05	0.0000	5.598E-05	0.0001	2.119E-04	0.0002
Total	8.938E-01	0.9692	6.065E-03	0.0066	0.000E+00	0.0000	2.201E-02	0.0239	2.029E-05	0.0000	5.598E-05	0.0001	2.119E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.221E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.221E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	8.317E-02	7.416E-02	5.896E-02	2.642E-02	2.669E-03	8.838E-07	6.601E-17	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	2.485E-02	6.063E-02	9.104E-02	6.589E-02	7.181E-03	2.302E-06	1.554E-16	0.000E+00
Ra-228+D	ΣDSR(j)		1.080E-01	1.348E-01	1.500E-01	9.230E-02	9.849E-03	3.186E-06	2.214E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.341E-01	9.387E-02	4.600E-02	3.788E-03	3.022E-06	4.328E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	4.615E-04	4.823E-04	5.240E-04	6.700E-04	1.087E-03	2.548E-03	5.693E-03	5.688E-03
Th-232	Ra-228+D	1.000E+00	5.055E-03	1.458E-02	3.083E-02	6.713E-02	1.027E-01	1.613E-01	3.567E-01	3.564E-01
Th-232	Th-228+D	1.000E+00	1.041E-03	6.401E-03	2.569E-02	9.959E-02	1.822E-01	2.805E-01	5.605E-01	5.600E-01
Th-232	ΣDSR(j)		6.558E-03	2.146E-02	5.704E-02	1.674E-01	2.860E-01	4.444E-01	9.230E-01	9.221E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	2.314E+02	1.855E+02	1.667E+02	2.708E+02	2.538E+03	7.848E+06	*2.726E+14	*2.726E+14	
Th-228	1.864E+02	2.663E+02	5.435E+02	6.600E+03	8.273E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	3.812E+03	1.165E+03	4.383E+02	1.493E+02	8.741E+01	5.625E+01	2.709E+01	2.711E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 247.7 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.906 ± 0.006	1.500E-01	1.666E+02	1.231E-13	2.030E+14
Th-228	1.000E+00	0.000E+00	1.341E-01	1.864E+02	0.000E+00	*8.195E+14
Th-232	1.000E+00	247.7 ± 0.5	9.344E-01	2.675E+01	9.344E-01	2.675E+01

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 3 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	8.317E-02	7.416E-02	5.896E-02	2.642E-02	2.669E-03	8.838E-07	6.601E-17	0.000E+00
Ra-228	Th-232	1.000E+00	5.055E-03	1.458E-02	3.083E-02	6.713E-02	1.027E-01	1.613E-01	3.567E-01	3.564E-01
Ra-228	ΣDOSE(j)		8.823E-02	8.874E-02	8.978E-02	9.355E-02	1.053E-01	1.613E-01	3.567E-01	3.564E-01
Th-228	Ra-228	1.000E+00	2.485E-02	6.063E-02	9.104E-02	6.589E-02	7.181E-03	2.302E-06	1.554E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.341E-01	9.387E-02	4.600E-02	3.788E-03	3.022E-06	4.328E-17	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.041E-03	6.401E-03	2.569E-02	9.959E-02	1.822E-01	2.805E-01	5.605E-01	5.600E-01
Th-228	ΣDOSE(j)		1.600E-01	1.609E-01	1.627E-01	1.693E-01	1.894E-01	2.805E-01	5.605E-01	5.600E-01
Th-232	Th-232	1.000E+00	4.615E-04	4.823E-04	5.240E-04	6.700E-04	1.087E-03	2.548E-03	5.693E-03	5.688E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.54 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.409E-01	7.448E-01	7.526E-01	7.807E-01	8.684E-01	1.285E+00	2.824E+00	2.821E+00
M(t):	2.964E-02	2.979E-02	3.010E-02	3.123E-02	3.473E-02	5.139E-02	1.130E-01	1.129E-01

Maximum TDOSE(t): 2.848E+00 mrem/yr at t = 247.7 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.487E-13	0.0000	2.076E-16	0.0000	0.000E+00	0.0000	2.194E-14	0.0000	1.979E-17	0.0000	5.695E-17	0.0000	1.138E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.618E+00	0.9190	7.795E-03	0.0027	0.000E+00	0.0000	2.201E-01	0.0773	2.024E-04	0.0001	5.583E-04	0.0002	2.105E-03	0.0007
Total	2.618E+00	0.9190	7.795E-03	0.0027	0.000E+00	0.0000	2.201E-01	0.0773	2.024E-04	0.0001	5.583E-04	0.0002	2.105E-03	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.477E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.711E-13	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.848E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.848E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.140E-01	0.2888	5.878E-07	0.0000	0.000E+00	0.0000	1.684E-01	0.2273	9.937E-05	0.0001	2.642E-04	0.0004	1.273E-06	0.0000
Th-228	3.308E-01	0.4465	2.149E-06	0.0000	0.000E+00	0.0000	1.120E-03	0.0015	6.999E-08	0.0000	9.631E-09	0.0000	5.429E-07	0.0000
Th-232	1.197E-02	0.0162	1.297E-05	0.0000	0.000E+00	0.0000	1.423E-02	0.0192	4.370E-06	0.0000	1.248E-05	0.0000	2.426E-06	0.0000
Total	5.567E-01	0.7514	1.571E-05	0.0000	0.000E+00	0.0000	1.838E-01	0.2480	1.038E-04	0.0001	2.767E-04	0.0004	4.242E-06	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.827E-01	0.5166
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.319E-01	0.4480
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.623E-02	0.0354
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.409E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.860E-01	0.3840	3.253E-06	0.0000	0.000E+00	0.0000	1.498E-01	0.2011	8.849E-05	0.0001	2.352E-04	0.0003	3.853E-06	0.0000
Th-228	2.317E-01	0.3111	4.679E-06	0.0000	0.000E+00	0.0000	7.803E-04	0.0010	5.691E-08	0.0000	8.163E-09	0.0000	1.182E-06	0.0000
Th-232	4.274E-02	0.0574	3.920E-05	0.0001	0.000E+00	0.0000	3.336E-02	0.0448	1.558E-05	0.0000	4.233E-05	0.0001	7.691E-06	0.0000
Total	5.604E-01	0.7524	4.713E-05	0.0001	0.000E+00	0.0000	1.839E-01	0.2470	1.041E-04	0.0001	2.775E-04	0.0004	1.273E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.361E-01	0.5856
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.325E-01	0.3121
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.620E-02	0.1023
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.448E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.337E-01	0.4434	1.087E-05	0.0000	0.000E+00	0.0000	1.183E-01	0.1571	7.002E-05	0.0001	1.863E-04	0.0002	8.327E-06	0.0000
Th-228	1.136E-01	0.1510	5.351E-06	0.0000	0.000E+00	0.0000	3.787E-04	0.0005	3.556E-08	0.0000	5.370E-09	0.0000	1.352E-06	0.0000
Th-232	1.205E-01	0.1601	9.374E-05	0.0001	0.000E+00	0.0000	6.560E-02	0.0872	3.487E-05	0.0000	9.349E-05	0.0001	2.002E-05	0.0000
Total	5.678E-01	0.7545	1.100E-04	0.0001	0.000E+00	0.0000	1.842E-01	0.2448	1.049E-04	0.0001	2.798E-04	0.0004	2.970E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.522E-01	0.6009
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.140E-01	0.1515
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.863E-01	0.2476
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.526E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.127E-01	0.2724	2.250E-05	0.0000	0.000E+00	0.0000	5.134E-02	0.0658	3.084E-05	0.0000	8.234E-05	0.0001	1.290E-05	0.0000
Th-228	9.386E-03	0.0120	1.278E-06	0.0000	0.000E+00	0.0000	3.014E-05	0.0000	5.027E-09	0.0000	8.172E-10	0.0000	3.230E-07	0.0000
Th-232	3.725E-01	0.4772	3.061E-04	0.0004	0.000E+00	0.0000	1.339E-01	0.1715	7.687E-05	0.0001	2.054E-04	0.0003	7.587E-05	0.0001
Total	5.946E-01	0.7617	3.299E-04	0.0004	0.000E+00	0.0000	1.853E-01	0.2373	1.077E-04	0.0001	2.877E-04	0.0004	8.909E-05	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.642E-01	0.3384
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.417E-03	0.0121
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.071E-01	0.6495
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.807E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.314E-02	0.0267	6.364E-06	0.0000	0.000E+00	0.0000	4.683E-03	0.0054	2.950E-06	0.0000	7.962E-06	0.0000	3.489E-06	0.0000
Th-228	7.557E-06	0.0000	2.652E-09	0.0000	0.000E+00	0.0000	2.183E-08	0.0000	8.088E-12	0.0000	1.381E-12	0.0000	6.700E-10	0.0000
Th-232	6.554E-01	0.7547	9.519E-04	0.0011	0.000E+00	0.0000	1.835E-01	0.2113	1.127E-04	0.0001	3.025E-04	0.0003	2.553E-04	0.0003
Total	6.785E-01	0.7814	9.582E-04	0.0011	0.000E+00	0.0000	1.882E-01	0.2167	1.157E-04	0.0001	3.105E-04	0.0004	2.588E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.785E-02	0.0321
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.582E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.405E-01	0.9679
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.684E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.912E-06	0.0000	4.539E-09	0.0000	0.000E+00	0.0000	1.068E-06	0.0000	7.765E-10	0.0000	2.157E-09	0.0000	2.487E-09	0.0000
Th-228	1.124E-16	0.0000	8.453E-20	0.0000	0.000E+00	0.0000	2.226E-19	0.0000	2.306E-22	0.0000	4.037E-23	0.0000	2.136E-20	0.0000
Th-232	1.082E+00	0.8420	3.157E-03	0.0025	0.000E+00	0.0000	1.985E-01	0.1545	1.436E-04	0.0001	3.902E-04	0.0003	8.526E-04	0.0007
Total	1.082E+00	0.8420	3.157E-03	0.0025	0.000E+00	0.0000	1.985E-01	0.1545	1.436E-04	0.0001	3.902E-04	0.0003	8.526E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.990E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.285E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.285E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.300E-16	0.0000	3.814E-19	0.0000	0.000E+00	0.0000	4.007E-17	0.0000	3.622E-20	0.0000	1.043E-19	0.0000	2.090E-19	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.593E+00	0.9182	7.852E-03	0.0028	0.000E+00	0.0000	2.204E-01	0.0780	2.031E-04	0.0001	5.603E-04	0.0002	2.120E-03	0.0008
Total	2.593E+00	0.9182	7.852E-03	0.0028	0.000E+00	0.0000	2.204E-01	0.0780	2.031E-04	0.0001	5.603E-04	0.0002	2.120E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.708E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.824E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.824E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.591E+00	0.9182	7.845E-03	0.0028	0.000E+00	0.0000	2.201E-01	0.0780	2.029E-04	0.0001	5.598E-04	0.0002	2.119E-03	0.0008
Total	2.591E+00	0.9182	7.845E-03	0.0028	0.000E+00	0.0000	2.201E-01	0.0780	2.029E-04	0.0001	5.598E-04	0.0002	2.119E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.821E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.821E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 30 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	3.205E-01	2.852E-01	2.260E-01	1.001E-01	9.805E-03	2.990E-06	2.179E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	6.226E-02	1.509E-01	2.262E-01	1.641E-01	1.804E-02	6.000E-06	4.528E-16	0.000E+00
Ra-228+D	ΣDSR(j)		3.827E-01	4.361E-01	4.522E-01	2.642E-01	2.785E-02	8.990E-06	6.708E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.319E-01	2.325E-01	1.140E-01	9.417E-03	7.582E-06	1.127E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	4.525E-03	4.559E-03	4.627E-03	4.867E-03	5.551E-03	7.948E-03	1.314E-02	1.313E-02
Th-232	Ra-228+D	1.000E+00	1.908E-02	5.565E-02	1.177E-01	2.540E-01	3.768E-01	5.453E-01	1.177E+00	1.176E+00
Th-232	Th-228+D	1.000E+00	2.625E-03	1.599E-02	6.397E-02	2.482E-01	4.582E-01	7.316E-01	1.634E+00	1.632E+00
Th-232	ΣDSR(j)		2.623E-02	7.620E-02	1.863E-01	5.071E-01	8.405E-01	1.285E+00	2.824E+00	2.821E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	6.532E+01	5.732E+01	5.528E+01	9.464E+01	8.978E+02	2.781E+06	*2.726E+14	*2.726E+14	
Th-228	7.531E+01	1.075E+02	2.193E+02	2.655E+03	3.297E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	9.531E+02	3.281E+02	1.342E+02	4.930E+01	2.974E+01	1.946E+01	8.853E+00	8.861E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.7 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.316 ± 0.005	4.562E-01	5.480E+01	3.711E-13	6.737E+13
Th-228	1.000E+00	0.000E+00	3.319E-01	7.531E+01	0.000E+00	*8.195E+14
Th-232	1.000E+00	247.7 ± 0.5	2.848E+00	8.777E+00	2.848E+00	8.777E+00

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 30 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	3.205E-01	2.852E-01	2.260E-01	1.001E-01	9.805E-03	2.990E-06	2.179E-16	0.000E+00
Ra-228	Th-232	1.000E+00	1.908E-02	5.565E-02	1.177E-01	2.540E-01	3.768E-01	5.453E-01	1.177E+00	1.176E+00
Ra-228	ΣDOSE(j)		3.395E-01	3.409E-01	3.438E-01	3.541E-01	3.866E-01	5.453E-01	1.177E+00	1.176E+00
Th-228	Ra-228	1.000E+00	6.226E-02	1.509E-01	2.262E-01	1.641E-01	1.804E-02	6.000E-06	4.528E-16	0.000E+00
Th-228	Th-228	1.000E+00	3.319E-01	2.325E-01	1.140E-01	9.417E-03	7.582E-06	1.127E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	2.625E-03	1.599E-02	6.397E-02	2.482E-01	4.582E-01	7.316E-01	1.634E+00	1.632E+00
Th-228	ΣDOSE(j)		3.968E-01	3.993E-01	4.042E-01	4.217E-01	4.762E-01	7.316E-01	1.634E+00	1.632E+00
Th-232	Th-232	1.000E+00	4.525E-03	4.559E-03	4.627E-03	4.867E-03	5.551E-03	7.948E-03	1.314E-02	1.313E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.47 seconds

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Summary : Hematite - Root Th-232+C CSM - AF 300 m^2

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Root Th-232+C CSM - AF 300 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm ³ /g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m ³ /yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Root Th-232+C CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Root Th-232+C CSM - AF 300 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Th-232+C CSM - AF 300 m^2

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	300.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.429E+00	2.435E+00	2.447E+00	2.489E+00	2.618E+00	3.211E+00	5.721E+00	5.716E+00
M(t):	9.716E-02	9.741E-02	9.788E-02	9.956E-02	1.047E-01	1.285E-01	2.289E-01	2.286E-01

Maximum TDOSE(t): 5.741E+00 mrem/yr at t = 247.9 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.530E-13	0.0000	2.600E-16	0.0000	0.000E+00	0.0000	2.130E-13	0.0000	1.921E-16	0.0000	5.530E-16	0.0000	1.105E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.500E+00	0.6097	1.006E-02	0.0018	0.000E+00	0.0000	2.202E+00	0.3835	2.025E-03	0.0004	5.586E-03	0.0010	2.107E-02	0.0037
Total	3.500E+00	0.6097	1.006E-02	0.0018	0.000E+00	0.0000	2.202E+00	0.3835	2.025E-03	0.0004	5.586E-03	0.0010	2.107E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.479E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.681E-13	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.741E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.741E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.231E-01	0.0919	7.578E-07	0.0000	0.000E+00	0.0000	1.684E+00	0.6933	9.937E-04	0.0004	2.642E-03	0.0011	1.273E-05	0.0000
Th-228	3.520E-01	0.1449	2.770E-06	0.0000	0.000E+00	0.0000	1.120E-02	0.0046	6.999E-07	0.0000	9.631E-08	0.0000	5.429E-06	0.0000
Th-232	1.246E-02	0.0051	1.673E-05	0.0000	0.000E+00	0.0000	1.423E-01	0.0586	4.370E-05	0.0000	1.248E-04	0.0001	2.426E-05	0.0000
Total	5.876E-01	0.2419	2.026E-05	0.0000	0.000E+00	0.0000	1.838E+00	0.7565	1.038E-03	0.0004	2.767E-03	0.0011	4.242E-05	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.911E+00	0.7867
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.632E-01	0.1495
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.550E-01	0.0638
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.429E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.005E-01	0.1234	4.194E-06	0.0000	0.000E+00	0.0000	1.498E+00	0.6152	8.849E-04	0.0004	2.352E-03	0.0010	3.853E-05	0.0000
Th-228	2.467E-01	0.1013	6.033E-06	0.0000	0.000E+00	0.0000	7.803E-03	0.0032	5.691E-07	0.0000	8.163E-08	0.0000	1.182E-05	0.0000
Th-232	4.470E-02	0.0184	5.054E-05	0.0000	0.000E+00	0.0000	3.336E-01	0.1370	1.558E-04	0.0001	4.233E-04	0.0002	7.691E-05	0.0000
Total	5.918E-01	0.2430	6.077E-05	0.0000	0.000E+00	0.0000	1.839E+00	0.7553	1.041E-03	0.0004	2.775E-03	0.0011	1.273E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.802E+00	0.7399
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.545E-01	0.1045
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.790E-01	0.1556
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.435E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.525E-01	0.1440	1.402E-05	0.0000	0.000E+00	0.0000	1.183E+00	0.4833	7.002E-04	0.0003	1.863E-03	0.0008	8.327E-05	0.0000
Th-228	1.211E-01	0.0495	6.900E-06	0.0000	0.000E+00	0.0000	3.787E-03	0.0015	3.556E-07	0.0000	5.370E-08	0.0000	1.352E-05	0.0000
Th-232	1.267E-01	0.0518	1.209E-04	0.0000	0.000E+00	0.0000	6.560E-01	0.2681	3.487E-04	0.0001	9.349E-04	0.0004	2.002E-04	0.0001
Total	6.003E-01	0.2453	1.418E-04	0.0001	0.000E+00	0.0000	1.842E+00	0.7529	1.049E-03	0.0004	2.798E-03	0.0011	2.970E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.538E+00	0.6284
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.249E-01	0.0510
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.844E-01	0.3206
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.447E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.261E-01	0.0909	2.902E-05	0.0000	0.000E+00	0.0000	5.134E-01	0.2063	3.084E-04	0.0001	8.234E-04	0.0003	1.290E-04	0.0001
Th-228	1.004E-02	0.0040	1.648E-06	0.0000	0.000E+00	0.0000	3.014E-04	0.0001	5.027E-08	0.0000	8.172E-09	0.0000	3.230E-06	0.0000
Th-232	3.949E-01	0.1587	3.947E-04	0.0002	0.000E+00	0.0000	1.339E+00	0.5379	7.687E-04	0.0003	2.054E-03	0.0008	7.587E-04	0.0003
Total	6.311E-01	0.2536	4.254E-04	0.0002	0.000E+00	0.0000	1.853E+00	0.7443	1.077E-03	0.0004	2.877E-03	0.0012	8.909E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.408E-01	0.2976
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.035E-02	0.0042
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.738E+00	0.6982
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.489E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.490E-02	0.0095	8.205E-06	0.0000	0.000E+00	0.0000	4.683E-02	0.0179	2.950E-05	0.0000	7.962E-05	0.0000	3.489E-05	0.0000
Th-228	8.179E-06	0.0000	3.419E-09	0.0000	0.000E+00	0.0000	2.183E-07	0.0000	8.088E-11	0.0000	1.381E-11	0.0000	6.700E-09	0.0000
Th-232	7.035E-01	0.2687	1.227E-03	0.0005	0.000E+00	0.0000	1.835E+00	0.7008	1.127E-03	0.0004	3.025E-03	0.0012	2.553E-03	0.0010
Total	7.284E-01	0.2782	1.236E-03	0.0005	0.000E+00	0.0000	1.882E+00	0.7187	1.157E-03	0.0004	3.105E-03	0.0012	2.588E-03	0.0010

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.188E-02	0.0275
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.408E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.546E+00	0.9725
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.618E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.860E-06	0.0000	5.852E-09	0.0000	0.000E+00	0.0000	1.068E-05	0.0000	7.765E-09	0.0000	2.157E-08	0.0000	2.487E-08	0.0000
Th-228	1.266E-16	0.0000	1.090E-19	0.0000	0.000E+00	0.0000	2.226E-18	0.0000	2.306E-21	0.0000	4.037E-22	0.0000	2.136E-19	0.0000
Th-232	1.209E+00	0.3764	4.071E-03	0.0013	0.000E+00	0.0000	1.985E+00	0.6180	1.436E-03	0.0004	3.902E-03	0.0012	8.526E-03	0.0027
Total	1.209E+00	0.3765	4.071E-03	0.0013	0.000E+00	0.0000	1.985E+00	0.6180	1.436E-03	0.0004	3.902E-03	0.0012	8.526E-03	0.0027

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.960E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.292E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.211E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.211E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.459E-16	0.0000	4.918E-19	0.0000	0.000E+00	0.0000	4.007E-16	0.0000	3.622E-19	0.0000	1.043E-18	0.0000	2.090E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.479E+00	0.6080	1.012E-02	0.0018	0.000E+00	0.0000	2.204E+00	0.3852	2.031E-03	0.0004	5.603E-03	0.0010	2.120E-02	0.0037
Total	3.479E+00	0.6080	1.012E-02	0.0018	0.000E+00	0.0000	2.204E+00	0.3852	2.031E-03	0.0004	5.603E-03	0.0010	2.120E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.251E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.721E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.721E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.476E+00	0.6081	1.012E-02	0.0018	0.000E+00	0.0000	2.201E+00	0.3851	2.029E-03	0.0004	5.598E-03	0.0010	2.119E-02	0.0037
Total	3.476E+00	0.6081	1.012E-02	0.0018	0.000E+00	0.0000	2.201E+00	0.3851	2.029E-03	0.0004	5.598E-03	0.0010	2.119E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.716E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.716E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 300 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.834E+00	1.628E+00	1.283E+00	5.575E-01	5.160E-02	1.266E-05	6.341E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	7.700E-02	1.738E-01	2.547E-01	1.832E-01	2.027E-02	6.938E-06	6.165E-16	0.000E+00
Ra-228+D	ΣDSR(j)		1.911E+00	1.802E+00	1.538E+00	7.408E-01	7.188E-02	1.960E-05	1.251E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.632E-01	2.545E-01	1.249E-01	1.035E-02	8.408E-06	1.292E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	4.513E-02	4.525E-02	4.548E-02	4.629E-02	4.862E-02	5.678E-02	7.429E-02	7.421E-02
Th-232	Ra-228+D	1.000E+00	1.064E-01	3.146E-01	6.653E-01	1.411E+00	1.980E+00	2.305E+00	3.419E+00	3.415E+00
Th-232	Th-228+D	1.000E+00	3.428E-03	1.916E-02	7.360E-02	2.802E-01	5.183E-01	8.495E-01	2.228E+00	2.226E+00
Th-232	ΣDSR(j)		1.550E-01	3.790E-01	7.844E-01	1.738E+00	2.546E+00	3.211E+00	5.721E+00	5.716E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.308E+01	1.388E+01	1.626E+01	3.375E+01	3.478E+02	1.275E+06	*2.726E+14	*2.726E+14	
Th-228	6.883E+01	9.824E+01	2.001E+02	2.415E+03	2.973E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.613E+02	6.597E+01	3.187E+01	1.439E+01	9.818E+00	7.785E+00	4.369E+00	4.374E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 247.9 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	1.911E+00	1.308E+01	6.681E-13	3.742E+13
Th-228	1.000E+00	0.000E+00	3.632E-01	6.883E+01	0.000E+00	*8.195E+14
Th-232	1.000E+00	247.9 ± 0.5	5.741E+00	4.355E+00	5.741E+00	4.355E+00

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 300 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.834E+00	1.628E+00	1.283E+00	5.575E-01	5.160E-02	1.266E-05	6.341E-16	0.000E+00
Ra-228	Th-232	1.000E+00	1.064E-01	3.146E-01	6.653E-01	1.411E+00	1.980E+00	2.305E+00	3.419E+00	3.415E+00
Ra-228	ΣDOSE(j)		1.940E+00	1.943E+00	1.948E+00	1.969E+00	2.031E+00	2.305E+00	3.419E+00	3.415E+00
Th-228	Ra-228	1.000E+00	7.700E-02	1.738E-01	2.547E-01	1.832E-01	2.027E-02	6.938E-06	6.165E-16	0.000E+00
Th-228	Th-228	1.000E+00	3.632E-01	2.545E-01	1.249E-01	1.035E-02	8.408E-06	1.292E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	3.428E-03	1.916E-02	7.360E-02	2.802E-01	5.183E-01	8.495E-01	2.228E+00	2.226E+00
Th-228	ΣDOSE(j)		4.436E-01	4.474E-01	4.532E-01	4.738E-01	5.386E-01	8.495E-01	2.228E+00	2.226E+00
Th-232	Th-232	1.000E+00	4.513E-02	4.525E-02	4.548E-02	4.629E-02	4.862E-02	5.678E-02	7.429E-02	7.421E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.59 seconds

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Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.350E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	1.500E-01	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.690E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	7.600E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.983E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.211E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m^2

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	3000.00 square meters	Ra-228	1.000E+00
Thickness:	1.35 meters	Th-228	1.000E+00
Cover Depth:	0.15 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.751E+00	6.762E+00	6.781E+00	6.850E+00	7.055E+00	7.914E+00	1.124E+01	1.123E+01
M(t):	2.700E-01	2.705E-01	2.712E-01	2.740E-01	2.822E-01	3.166E-01	4.496E-01	4.491E-01

Maximum TDOSE(t): 1.125E+01 mrem/yr at t = 248.2 ± 0.5 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.482E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.711E-13	0.0000	3.244E-16	0.0000	0.000E+00	0.0000	6.893E-13	0.0000	1.866E-15	0.0000	5.370E-15	0.0000	3.579E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.750E+00	0.3334	1.293E-02	0.0011	0.000E+00	0.0000	7.340E+00	0.6525	2.025E-02	0.0018	5.588E-02	0.0050	7.031E-02	0.0063
Total	3.750E+00	0.3334	1.293E-02	0.0011	0.000E+00	0.0000	7.340E+00	0.6525	2.025E-02	0.0018	5.588E-02	0.0050	7.031E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.482E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.171E-12	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.125E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.125E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.231E-01	0.0331	9.730E-07	0.0000	0.000E+00	0.0000	5.614E+00	0.8315	9.937E-03	0.0015	2.642E-02	0.0039	4.244E-05	0.0000
Th-228	3.520E-01	0.0521	3.557E-06	0.0000	0.000E+00	0.0000	3.734E-02	0.0055	6.999E-06	0.0000	9.631E-07	0.0000	1.810E-05	0.0000
Th-232	1.246E-02	0.0018	2.148E-05	0.0000	0.000E+00	0.0000	4.743E-01	0.0703	4.370E-04	0.0001	1.248E-03	0.0002	8.088E-05	0.0000
Total	5.876E-01	0.0870	2.601E-05	0.0000	0.000E+00	0.0000	6.125E+00	0.9073	1.038E-02	0.0015	2.767E-02	0.0041	1.414E-04	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.873E+00	0.8700
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.894E-01	0.0577
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.886E-01	0.0724
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.751E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.005E-01	0.0444	5.385E-06	0.0000	0.000E+00	0.0000	4.994E+00	0.7385	8.849E-03	0.0013	2.352E-02	0.0035	1.284E-04	0.0000
Th-228	2.467E-01	0.0365	7.746E-06	0.0000	0.000E+00	0.0000	2.601E-02	0.0038	5.691E-06	0.0000	8.163E-07	0.0000	3.941E-05	0.0000
Th-232	4.471E-02	0.0066	6.489E-05	0.0000	0.000E+00	0.0000	1.112E+00	0.1644	1.558E-03	0.0002	4.233E-03	0.0006	2.564E-04	0.0000
Total	5.918E-01	0.0875	7.802E-05	0.0000	0.000E+00	0.0000	6.131E+00	0.9068	1.041E-02	0.0015	2.775E-02	0.0041	4.242E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.326E+00	0.7877
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.727E-01	0.0403
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.163E+00	0.1719
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.762E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.525E-01	0.0520	1.800E-05	0.0000	0.000E+00	0.0000	3.942E+00	0.5813	7.002E-03	0.0010	1.863E-02	0.0027	2.776E-04	0.0000
Th-228	1.211E-01	0.0179	8.859E-06	0.0000	0.000E+00	0.0000	1.262E-02	0.0019	3.556E-06	0.0000	5.370E-07	0.0000	4.507E-05	0.0000
Th-232	1.267E-01	0.0187	1.552E-04	0.0000	0.000E+00	0.0000	2.187E+00	0.3225	3.487E-03	0.0005	9.349E-03	0.0014	6.672E-04	0.0001
Total	6.004E-01	0.0885	1.821E-04	0.0000	0.000E+00	0.0000	6.141E+00	0.9056	1.049E-02	0.0015	2.798E-02	0.0041	9.899E-04	0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.320E+00	0.6371
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.338E-01	0.0197
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.327E+00	0.3432
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.781E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.262E-01	0.0330	3.726E-05	0.0000	0.000E+00	0.0000	1.711E+00	0.2498	3.084E-03	0.0005	8.234E-03	0.0012	4.299E-04	0.0001
Th-228	1.005E-02	0.0015	2.116E-06	0.0000	0.000E+00	0.0000	1.005E-03	0.0001	5.027E-07	0.0000	8.172E-08	0.0000	1.077E-05	0.0000
Th-232	3.950E-01	0.0577	5.068E-04	0.0001	0.000E+00	0.0000	4.463E+00	0.6516	7.687E-03	0.0011	2.054E-02	0.0030	2.529E-03	0.0004
Total	6.313E-01	0.0922	5.462E-04	0.0001	0.000E+00	0.0000	6.175E+00	0.9015	1.077E-02	0.0016	2.877E-02	0.0042	2.970E-03	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.949E+00	0.2846
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.106E-02	0.0016
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.889E+00	0.7138
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.850E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.492E-02	0.0035	1.054E-05	0.0000	0.000E+00	0.0000	1.561E-01	0.0221	2.950E-04	0.0000	7.962E-04	0.0001	1.163E-04	0.0000
Th-228	8.186E-06	0.0000	4.390E-09	0.0000	0.000E+00	0.0000	7.276E-07	0.0000	8.088E-10	0.0000	1.381E-10	0.0000	2.233E-08	0.0000
Th-232	7.040E-01	0.0998	1.576E-03	0.0002	0.000E+00	0.0000	6.117E+00	0.8671	1.127E-02	0.0016	3.025E-02	0.0043	8.509E-03	0.0012
Total	7.290E-01	0.1033	1.586E-03	0.0002	0.000E+00	0.0000	6.273E+00	0.8892	1.157E-02	0.0016	3.105E-02	0.0044	8.626E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.822E-01	0.0258
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.941E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.872E+00	0.9742
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.055E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.883E-06	0.0000	7.515E-09	0.0000	0.000E+00	0.0000	3.560E-05	0.0000	7.765E-08	0.0000	2.157E-07	0.0000	8.291E-08	0.0000
Th-228	1.269E-16	0.0000	1.399E-19	0.0000	0.000E+00	0.0000	7.419E-18	0.0000	2.306E-20	0.0000	4.037E-21	0.0000	7.119E-19	0.0000
Th-232	1.212E+00	0.1531	5.227E-03	0.0007	0.000E+00	0.0000	6.615E+00	0.8359	1.436E-02	0.0018	3.902E-02	0.0049	2.842E-02	0.0036
Total	1.212E+00	0.1531	5.227E-03	0.0007	0.000E+00	0.0000	6.615E+00	0.8359	1.436E-02	0.0018	3.902E-02	0.0049	2.842E-02	0.0036

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.487E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.352E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.914E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.914E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - ROOT TH-232+C CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.082E-16	0.0000	6.314E-19	0.0000	0.000E+00	0.0000	1.336E-15	0.0000	3.622E-18	0.0000	1.043E-17	0.0000	6.967E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.734E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.346E+00	0.6536	2.031E-02	0.0018	5.603E-02	0.0050	7.068E-02	0.0063
Total	3.734E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.346E+00	0.6536	2.031E-02	0.0018	5.603E-02	0.0050	7.068E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.266E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.731E+00	0.3323	1.299E-02	0.0012	0.000E+00	0.0000	7.337E+00	0.6535	2.029E-02	0.0018	5.598E-02	0.0050	7.062E-02	0.0063
Total	3.731E+00	0.3323	1.299E-02	0.0012	0.000E+00	0.0000	7.337E+00	0.6535	2.029E-02	0.0018	5.598E-02	0.0050	7.062E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.123E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.123E+01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	5.768E+00	5.118E+00	4.030E+00	1.746E+00	1.600E-01	3.745E-05	1.585E-15	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.052E-01	2.083E-01	2.901E-01	2.034E-01	2.224E-02	7.421E-06	6.807E-16	0.000E+00
Ra-228+D	ΣDSR(j)		5.873E+00	5.326E+00	4.320E+00	1.949E+00	1.822E-01	4.487E-05	2.266E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.894E-01	2.727E-01	1.338E-01	1.106E-02	8.941E-06	1.352E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.504E-01	1.507E-01	1.514E-01	1.537E-01	1.601E-01	1.828E-01	2.312E-01	2.310E-01
Th-232	Ra-228+D	1.000E+00	3.331E-01	9.872E-01	2.088E+00	4.417E+00	6.135E+00	6.813E+00	8.539E+00	8.529E+00
Th-232	Th-228+D	1.000E+00	5.088E-03	2.476E-02	8.779E-02	3.186E-01	5.774E-01	9.180E-01	2.470E+00	2.468E+00
Th-232	ΣDSR(j)		4.886E-01	1.163E+00	2.327E+00	4.889E+00	6.872E+00	7.914E+00	1.124E+01	1.123E+01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	4.257E+00	4.694E+00	5.787E+00	1.283E+01	1.372E+02	5.571E+05	*2.726E+14	*2.726E+14	
Th-228	6.420E+01	9.167E+01	1.869E+02	2.259E+03	2.796E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	5.117E+01	2.150E+01	1.074E+01	5.113E+00	3.638E+00	3.159E+00	2.224E+00	2.227E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 248.2 ± 0.5 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	5.873E+00	4.257E+00	1.171E-12	2.134E+13
Th-228	1.000E+00	0.000E+00	3.894E-01	6.420E+01	0.000E+00	*8.195E+14
Th-232	1.000E+00	248.2 ± 0.5	1.125E+01	2.222E+00	1.125E+01	2.222E+00

*At specific activity limit

Summary : Hematite - Root Th-232+C CSM - AF 3,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	5.768E+00	5.118E+00	4.030E+00	1.746E+00	1.600E-01	3.745E-05	1.585E-15	0.000E+00
Ra-228	Th-232	1.000E+00	3.331E-01	9.872E-01	2.088E+00	4.417E+00	6.135E+00	6.813E+00	8.539E+00	8.529E+00
Ra-228	ΣDOSE(j)		6.101E+00	6.105E+00	6.118E+00	6.163E+00	6.295E+00	6.814E+00	8.539E+00	8.529E+00
Th-228	Ra-228	1.000E+00	1.052E-01	2.083E-01	2.901E-01	2.034E-01	2.224E-02	7.421E-06	6.807E-16	0.000E+00
Th-228	Th-228	1.000E+00	3.894E-01	2.727E-01	1.338E-01	1.106E-02	8.941E-06	1.352E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	5.088E-03	2.476E-02	8.779E-02	3.186E-01	5.774E-01	9.180E-01	2.470E+00	2.468E+00
Th-228	ΣDOSE(j)		4.996E-01	5.058E-01	5.117E-01	5.330E-01	5.997E-01	9.180E-01	2.470E+00	2.468E+00
Th-232	Th-232	1.000E+00	1.504E-01	1.507E-01	1.514E-01	1.537E-01	1.601E-01	1.828E-01	2.312E-01	2.310E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.687E-02	5.812E-06	1.963E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.730E-01	9.998E-01	9.996E-01	9.987E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.024E-02	8.710E-06	2.942E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.596E-01	9.998E-01	9.996E-01	9.987E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.996E-01	9.987E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.57 seconds

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Summary : Hematite - Surface CSM - AF 1 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 1 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 1 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Surface CSM - AF 1 m²

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.00 square meters	Am-241	1.000E+00
Thickness:	0.15 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.545E-02	5.444E-02	5.249E-02	4.644E-02	3.414E-02	1.610E-02	0.000E+00	0.000E+00
M(t):	2.218E-03	2.177E-03	2.100E-03	1.858E-03	1.366E-03	6.441E-04	0.000E+00	0.000E+00

Maximum TDOSE(t): 5.545E-02 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.384E-03	0.0250	1.193E-03	0.0215	0.000E+00	0.0000	4.024E-05	0.0007	2.667E-07	0.0000	3.818E-08	0.0000	5.153E-05	0.0009
Np-237	2.494E-02	0.4498	1.432E-03	0.0258	0.000E+00	0.0000	9.698E-04	0.0175	6.974E-06	0.0001	2.445E-07	0.0000	6.205E-05	0.0011
Pu-239	7.561E-06	0.0001	1.154E-03	0.0208	0.000E+00	0.0000	3.916E-05	0.0007	5.189E-07	0.0000	1.839E-08	0.0000	5.014E-05	0.0009
Pu-240	5.429E-06	0.0001	1.154E-03	0.0208	0.000E+00	0.0000	3.915E-05	0.0007	5.189E-07	0.0000	1.839E-08	0.0000	5.014E-05	0.0009
Tc-99	3.358E-06	0.0001	2.231E-08	0.0000	0.000E+00	0.0000	1.492E-04	0.0027	8.888E-09	0.0000	2.431E-07	0.0000	2.061E-08	0.0000
U-234	1.188E-05	0.0002	3.546E-04	0.0064	0.000E+00	0.0000	1.157E-05	0.0002	5.452E-07	0.0000	8.980E-07	0.0000	4.003E-06	0.0001
U-235	1.847E-02	0.3330	3.305E-04	0.0060	0.000E+00	0.0000	1.094E-05	0.0002	5.151E-07	0.0000	8.484E-07	0.0000	3.784E-06	0.0001
U-238	3.187E-03	0.0575	3.171E-04	0.0057	0.000E+00	0.0000	1.098E-05	0.0002	5.177E-07	0.0000	8.527E-07	0.0000	3.801E-06	0.0001
Total	4.800E-02	0.8657	5.935E-03	0.1070	0.000E+00	0.0000	1.271E-03	0.0229	9.865E-06	0.0002	3.162E-06	0.0001	2.255E-04	0.0041

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.669E-03	0.0481
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.741E-02	0.4944
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.251E-03	0.0226
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.249E-03	0.0225
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.529E-04	0.0028
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.835E-04	0.0069
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.881E-02	0.3393
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.520E-03	0.0635
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.545E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.381E-03	0.0254	1.187E-03	0.0218	0.000E+00	0.0000	4.001E-05	0.0007	2.651E-07	0.0000	3.797E-08	0.0000	5.123E-05	0.0009
Np-237	2.416E-02	0.4438	1.385E-03	0.0254	0.000E+00	0.0000	9.382E-04	0.0172	6.748E-06	0.0001	2.365E-07	0.0000	6.002E-05	0.0011
Pu-239	7.540E-06	0.0001	1.148E-03	0.0211	0.000E+00	0.0000	3.897E-05	0.0007	5.165E-07	0.0000	1.831E-08	0.0000	4.990E-05	0.0009
Pu-240	5.422E-06	0.0001	1.148E-03	0.0211	0.000E+00	0.0000	3.897E-05	0.0007	5.165E-07	0.0000	1.830E-08	0.0000	4.990E-05	0.0009
Tc-99	3.326E-06	0.0001	2.206E-08	0.0000	0.000E+00	0.0000	1.476E-04	0.0027	8.792E-09	0.0000	2.405E-07	0.0000	2.039E-08	0.0000
U-234	1.182E-05	0.0002	3.521E-04	0.0065	0.000E+00	0.0000	1.149E-05	0.0002	5.414E-07	0.0000	8.918E-07	0.0000	3.976E-06	0.0001
U-235	1.836E-02	0.3373	3.282E-04	0.0060	0.000E+00	0.0000	1.089E-05	0.0002	5.115E-07	0.0000	8.425E-07	0.0000	3.761E-06	0.0001
U-238	3.169E-03	0.0582	3.149E-04	0.0058	0.000E+00	0.0000	1.091E-05	0.0002	5.141E-07	0.0000	8.467E-07	0.0000	3.775E-06	0.0001
Total	4.710E-02	0.8652	5.864E-03	0.1077	0.000E+00	0.0000	1.237E-03	0.0227	9.622E-06	0.0002	3.133E-06	0.0001	2.226E-04	0.0041

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.659E-03	0.0488
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.655E-02	0.4878
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.245E-03	0.0229
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.243E-03	0.0228
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.512E-04	0.0028
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.808E-04	0.0070
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.871E-02	0.3436
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.500E-03	0.0643
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.444E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.374E-03	0.0262	1.173E-03	0.0224	0.000E+00	0.0000	3.956E-05	0.0008	2.621E-07	0.0000	3.753E-08	0.0000	5.065E-05	0.0010
Np-237	2.267E-02	0.4319	1.296E-03	0.0247	0.000E+00	0.0000	8.779E-04	0.0167	6.314E-06	0.0001	2.213E-07	0.0000	5.616E-05	0.0011
Pu-239	7.498E-06	0.0001	1.138E-03	0.0217	0.000E+00	0.0000	3.861E-05	0.0007	5.117E-07	0.0000	1.814E-08	0.0000	4.944E-05	0.0009
Pu-240	5.409E-06	0.0001	1.137E-03	0.0217	0.000E+00	0.0000	3.860E-05	0.0007	5.116E-07	0.0000	1.813E-08	0.0000	4.943E-05	0.0009
Tc-99	3.265E-06	0.0001	2.158E-08	0.0000	0.000E+00	0.0000	1.444E-04	0.0028	8.602E-09	0.0000	2.353E-07	0.0000	1.995E-08	0.0000
U-234	1.172E-05	0.0002	3.472E-04	0.0066	0.000E+00	0.0000	1.133E-05	0.0002	5.338E-07	0.0000	8.793E-07	0.0000	3.920E-06	0.0001
U-235	1.815E-02	0.3459	3.238E-04	0.0062	0.000E+00	0.0000	1.079E-05	0.0002	5.044E-07	0.0000	8.307E-07	0.0000	3.715E-06	0.0001
U-238	3.133E-03	0.0597	3.105E-04	0.0059	0.000E+00	0.0000	1.075E-05	0.0002	5.069E-07	0.0000	8.349E-07	0.0000	3.722E-06	0.0001
Total	4.536E-02	0.8642	5.726E-03	0.1091	0.000E+00	0.0000	1.172E-03	0.0223	9.153E-06	0.0002	3.075E-06	0.0001	2.171E-04	0.0041

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.638E-03	0.0503
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.491E-02	0.4746
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.234E-03	0.0235
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.231E-03	0.0235
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.480E-04	0.0028
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.756E-04	0.0072
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.849E-02	0.3523
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.460E-03	0.0659
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.249E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.352E-03	0.0291	1.126E-03	0.0243	0.000E+00	0.0000	3.798E-05	0.0008	2.517E-07	0.0000	3.604E-08	0.0000	4.863E-05	0.0010
Np-237	1.814E-02	0.3906	1.027E-03	0.0221	0.000E+00	0.0000	6.955E-04	0.0150	5.002E-06	0.0001	1.753E-07	0.0000	4.449E-05	0.0010
Pu-239	7.351E-06	0.0002	1.100E-03	0.0237	0.000E+00	0.0000	3.735E-05	0.0008	4.950E-07	0.0000	1.754E-08	0.0000	4.782E-05	0.0010
Pu-240	5.363E-06	0.0001	1.100E-03	0.0237	0.000E+00	0.0000	3.732E-05	0.0008	4.946E-07	0.0000	1.753E-08	0.0000	4.778E-05	0.0010
Tc-99	3.058E-06	0.0001	1.998E-08	0.0000	0.000E+00	0.0000	1.337E-04	0.0029	7.962E-09	0.0000	2.178E-07	0.0000	1.846E-08	0.0000
U-234	1.138E-05	0.0002	3.304E-04	0.0071	0.000E+00	0.0000	1.078E-05	0.0002	5.080E-07	0.0000	8.366E-07	0.0000	3.730E-06	0.0001
U-235	1.744E-02	0.3755	3.091E-04	0.0067	0.000E+00	0.0000	1.043E-05	0.0002	4.799E-07	0.0000	7.905E-07	0.0000	3.562E-06	0.0001
U-238	3.011E-03	0.0648	2.954E-04	0.0064	0.000E+00	0.0000	1.023E-05	0.0002	4.823E-07	0.0000	7.944E-07	0.0000	3.542E-06	0.0001
Total	3.997E-02	0.8607	5.288E-03	0.1139	0.000E+00	0.0000	9.732E-04	0.0210	7.721E-06	0.0002	2.886E-06	0.0001	1.996E-04	0.0043

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.565E-03	0.0552
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.991E-02	0.4287
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.193E-03	0.0257
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.191E-03	0.0256
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.370E-04	0.0029
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.577E-04	0.0077
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.776E-02	0.3825
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.322E-03	0.0715
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.644E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.291E-03	0.0378	9.980E-04	0.0292	0.000E+00	0.0000	3.366E-05	0.0010	2.230E-07	0.0000	3.193E-08	0.0000	4.309E-05	0.0013
Np-237	9.560E-03	0.2800	5.250E-04	0.0154	0.000E+00	0.0000	3.557E-04	0.0104	2.558E-06	0.0001	8.972E-08	0.0000	2.275E-05	0.0007
Pu-239	6.930E-06	0.0002	9.957E-04	0.0292	0.000E+00	0.0000	3.379E-05	0.0010	4.479E-07	0.0000	1.587E-08	0.0000	4.327E-05	0.0013
Pu-240	5.233E-06	0.0002	9.933E-04	0.0291	0.000E+00	0.0000	3.371E-05	0.0010	4.468E-07	0.0000	1.584E-08	0.0000	4.317E-05	0.0013
Tc-99	2.530E-06	0.0001	1.594E-08	0.0000	0.000E+00	0.0000	1.067E-04	0.0031	6.353E-09	0.0000	1.738E-07	0.0000	1.473E-08	0.0000
U-234	1.065E-05	0.0003	2.854E-04	0.0084	0.000E+00	0.0000	9.307E-06	0.0003	4.385E-07	0.0000	7.223E-07	0.0000	3.222E-06	0.0001
U-235	1.551E-02	0.4541	2.712E-04	0.0079	0.000E+00	0.0000	9.455E-06	0.0003	4.144E-07	0.0000	6.826E-07	0.0000	3.164E-06	0.0001
U-238	2.679E-03	0.0785	2.551E-04	0.0075	0.000E+00	0.0000	8.835E-06	0.0003	4.164E-07	0.0000	6.859E-07	0.0000	3.058E-06	0.0001
Total	2.906E-02	0.8511	4.324E-03	0.1266	0.000E+00	0.0000	5.911E-04	0.0173	4.951E-06	0.0001	2.418E-06	0.0001	1.617E-04	0.0047

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.366E-03	0.0693
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.047E-02	0.3065
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.080E-03	0.0316
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.076E-03	0.0315
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.094E-04	0.0032
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.097E-04	0.0091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-02	0.4624
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.947E-03	0.0863
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.414E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.090E-03	0.0677	6.039E-04	0.0375	0.000E+00	0.0000	2.037E-05	0.0013	1.350E-07	0.0000	1.932E-08	0.0000	2.607E-05	0.0016
Np-237	9.573E-04	0.0594	4.643E-05	0.0029	0.000E+00	0.0000	3.144E-05	0.0020	2.261E-07	0.0000	7.987E-09	0.0000	2.011E-06	0.0001
Pu-239	5.417E-06	0.0003	6.484E-04	0.0403	0.000E+00	0.0000	2.201E-05	0.0014	2.917E-07	0.0000	1.034E-08	0.0000	2.817E-05	0.0017
Pu-240	4.801E-06	0.0003	6.433E-04	0.0400	0.000E+00	0.0000	2.184E-05	0.0014	2.894E-07	0.0000	1.026E-08	0.0000	2.796E-05	0.0017
Tc-99	1.256E-06	0.0001	6.684E-09	0.0000	0.000E+00	0.0000	4.473E-05	0.0028	2.665E-09	0.0000	7.289E-08	0.0000	6.177E-09	0.0000
U-234	9.727E-06	0.0006	1.580E-04	0.0098	0.000E+00	0.0000	5.156E-06	0.0003	2.424E-07	0.0000	3.992E-07	0.0000	1.783E-06	0.0001
U-235	9.700E-03	0.6024	1.644E-04	0.0102	0.000E+00	0.0000	6.246E-06	0.0004	2.294E-07	0.0000	3.775E-07	0.0000	2.003E-06	0.0001
U-238	1.680E-03	0.1043	1.410E-04	0.0088	0.000E+00	0.0000	4.883E-06	0.0003	2.302E-07	0.0000	3.791E-07	0.0000	1.690E-06	0.0001
Total	1.345E-02	0.8351	2.405E-03	0.1494	0.000E+00	0.0000	1.567E-04	0.0097	1.647E-06	0.0001	1.277E-06	0.0001	8.970E-05	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.740E-03	0.1081
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.037E-03	0.0644
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.043E-04	0.0437
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.982E-04	0.0434
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.607E-05	0.0029
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.753E-04	0.0109
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.873E-03	0.6131
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.828E-03	0.1135
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.610E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.669E-03	2.659E-03	2.638E-03	2.565E-03	2.366E-03	1.740E-03	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	4.447E-09	1.315E-08	2.962E-08	7.848E-08	1.618E-07	1.813E-07	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	9.826E-17	6.748E-16	3.454E-15	2.779E-14	1.745E-13	6.953E-13	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	2.284E-19	3.392E-18	3.872E-17	9.496E-16	1.863E-14	3.111E-13	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		2.669E-03	2.659E-03	2.638E-03	2.565E-03	2.366E-03	1.740E-03	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	2.741E-02	2.655E-02	2.491E-02	1.991E-02	1.047E-02	1.037E-03	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	9.049E-10	2.654E-09	5.947E-09	1.554E-08	3.078E-08	2.907E-08	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	2.817E-12	1.948E-11	1.003E-10	8.174E-10	5.312E-09	2.432E-08	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		2.741E-02	2.655E-02	2.491E-02	1.991E-02	1.047E-02	1.037E-03	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	1.251E-03	1.245E-03	1.234E-03	1.193E-03	1.080E-03	7.043E-04	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	9.262E-12	2.767E-11	6.400E-11	1.859E-10	4.911E-10	1.095E-09	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	3.098E-17	2.169E-16	1.138E-15	9.853E-15	7.516E-14	5.363E-13	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	1.761E-18	2.610E-17	2.973E-16	7.247E-15	1.400E-13	2.253E-12	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		1.251E-03	1.245E-03	1.234E-03	1.193E-03	1.080E-03	7.043E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	6.182E-11	6.153E-11	6.095E-11	5.893E-11	5.326E-11	3.456E-11	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	1.249E-03	1.243E-03	1.231E-03	1.191E-03	1.076E-03	6.982E-04	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	5.302E-12	1.584E-11	3.655E-11	1.052E-10	2.704E-10	5.379E-10	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	1.094E-21	7.619E-21	3.984E-20	3.433E-19	2.589E-18	1.760E-17	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	8.153E-22	1.189E-20	1.304E-19	2.795E-18	4.102E-17	4.327E-16	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	8.690E-23	2.474E-21	5.230E-20	2.329E-18	5.098E-17	6.225E-16	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		1.249E-03	1.243E-03	1.231E-03	1.191E-03	1.076E-03	6.982E-04	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.529E-04	1.512E-04	1.480E-04	1.370E-04	1.094E-04	4.607E-05	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	3.835E-04	3.808E-04	3.756E-04	3.575E-04	3.092E-04	1.724E-04	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	4.160E-09	1.241E-08	2.864E-08	8.266E-08	2.140E-07	4.379E-07	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	1.336E-10	9.323E-10	4.889E-09	4.249E-08	3.283E-07	2.457E-06	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	6.674E-15	7.458E-14	7.011E-13	1.501E-11	2.759E-10	4.368E-09	0.000E+00	0.000E+00
U-234	ΣDSR (j)		3.835E-04	3.808E-04	3.756E-04	3.577E-04	3.097E-04	1.753E-04	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	1.881E-02	1.870E-02	1.849E-02	1.776E-02	1.577E-02	9.807E-03	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	9.464E-08	2.835E-07	6.555E-07	1.898E-06	4.951E-06	1.047E-05	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	7.137E-09	4.926E-08	2.528E-07	2.039E-06	1.292E-05	5.521E-05	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		1.881E-02	1.871E-02	1.849E-02	1.776E-02	1.579E-02	9.873E-03	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	1.816E-08	1.804E-08	1.779E-08	1.693E-08	1.463E-08	8.137E-09	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	3.520E-03	3.500E-03	3.460E-03	3.322E-03	2.947E-03	1.828E-03	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	5.429E-10	1.619E-09	3.726E-09	1.064E-08	2.673E-08	4.911E-08	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	3.930E-15	2.734E-14	1.428E-13	1.225E-12	9.112E-12	5.928E-11	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	9.463E-17	1.414E-15	1.636E-14	4.202E-13	9.334E-12	2.229E-10	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	4.171E-21	9.519E-20	1.884E-18	1.159E-16	6.209E-15	3.356E-13	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		3.520E-03	3.500E-03	3.460E-03	3.322E-03	2.947E-03	1.828E-03	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM - AF 1 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	9.366E+03	9.403E+03	9.477E+03	9.745E+03	1.057E+04	1.437E+04	*3.431E+12	*3.431E+12
Np-237	9.120E+02	9.416E+02	1.004E+03	1.256E+03	2.389E+03	2.410E+04	*7.047E+08	*7.047E+08
Pu-239	1.998E+04	2.007E+04	2.026E+04	2.095E+04	2.315E+04	3.550E+04	*6.214E+10	*6.214E+10
Pu-240	2.002E+04	2.011E+04	2.030E+04	2.100E+04	2.324E+04	3.580E+04	*2.278E+11	*2.278E+11
Tc-99	1.635E+05	1.653E+05	1.690E+05	1.825E+05	2.285E+05	5.427E+05	*1.697E+10	*1.697E+10
U-234	6.519E+04	6.564E+04	6.656E+04	6.990E+04	8.072E+04	1.426E+05	*6.247E+09	*6.247E+09
U-235	1.329E+03	1.337E+03	1.352E+03	1.407E+03	1.583E+03	2.532E+03	*2.161E+06	*2.161E+06
U-238	7.103E+03	7.144E+03	7.226E+03	7.526E+03	8.483E+03	1.367E+04	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	2.669E-03	9.366E+03	2.669E-03	9.366E+03
Np-237	1.000E+00	0.000E+00	2.741E-02	9.120E+02	2.741E-02	9.120E+02
Pu-239	1.000E+00	0.000E+00	1.251E-03	1.998E+04	1.251E-03	1.998E+04
Pu-240	1.000E+00	0.000E+00	1.249E-03	2.002E+04	1.249E-03	2.002E+04
Tc-99	1.000E+00	0.000E+00	1.529E-04	1.635E+05	1.529E-04	1.635E+05
U-234	1.000E+00	0.000E+00	3.835E-04	6.519E+04	3.835E-04	6.519E+04
U-235	1.000E+00	0.000E+00	1.881E-02	1.329E+03	1.881E-02	1.329E+03
U-238	1.000E+00	0.000E+00	3.520E-03	7.103E+03	3.520E-03	7.103E+03

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.669E-03	2.659E-03	2.638E-03	2.565E-03	2.366E-03	1.740E-03	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	4.447E-09	1.315E-08	2.962E-08	7.848E-08	1.618E-07	1.813E-07	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	2.741E-02	2.655E-02	2.491E-02	1.991E-02	1.047E-02	1.037E-03	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		2.741E-02	2.655E-02	2.491E-02	1.991E-02	1.047E-02	1.037E-03	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	9.826E-17	6.748E-16	3.454E-15	2.779E-14	1.745E-13	6.953E-13	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	9.049E-10	2.654E-09	5.947E-09	1.554E-08	3.078E-08	2.907E-08	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		9.049E-10	2.654E-09	5.947E-09	1.554E-08	3.078E-08	2.907E-08	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	2.284E-19	3.392E-18	3.872E-17	9.496E-16	1.863E-14	3.111E-13	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	2.817E-12	1.948E-11	1.003E-10	8.174E-10	5.312E-09	2.432E-08	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		2.817E-12	1.948E-11	1.003E-10	8.174E-10	5.312E-09	2.432E-08	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	1.251E-03	1.245E-03	1.234E-03	1.193E-03	1.080E-03	7.043E-04	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	9.262E-12	2.767E-11	6.400E-11	1.859E-10	4.911E-10	1.095E-09	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	1.881E-02	1.870E-02	1.849E-02	1.776E-02	1.577E-02	9.807E-03	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		1.881E-02	1.870E-02	1.849E-02	1.776E-02	1.577E-02	9.807E-03	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	3.098E-17	2.169E-16	1.138E-15	9.853E-15	7.516E-14	5.363E-13	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	9.464E-08	2.835E-07	6.555E-07	1.898E-06	4.951E-06	1.047E-05	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		9.464E-08	2.835E-07	6.555E-07	1.898E-06	4.951E-06	1.047E-05	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	1.761E-18	2.610E-17	2.973E-16	7.247E-15	1.400E-13	2.253E-12	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	7.137E-09	4.926E-08	2.528E-07	2.039E-06	1.292E-05	5.521E-05	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		7.137E-09	4.926E-08	2.528E-07	2.039E-06	1.292E-05	5.521E-05	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	6.182E-11	6.153E-11	6.095E-11	5.893E-11	5.326E-11	3.456E-11	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	1.249E-03	1.243E-03	1.231E-03	1.191E-03	1.076E-03	6.982E-04	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		1.249E-03	1.243E-03	1.231E-03	1.191E-03	1.076E-03	6.982E-04	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	5.302E-12	1.584E-11	3.655E-11	1.052E-10	2.704E-10	5.379E-10	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	1.094E-21	7.619E-21	3.984E-20	3.433E-19	2.589E-18	1.760E-17	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	8.153E-22	1.189E-20	1.304E-19	2.795E-18	4.102E-17	4.327E-16	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	8.690E-23	2.474E-21	5.230E-20	2.329E-18	5.098E-17	6.225E-16	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.529E-04	1.512E-04	1.480E-04	1.370E-04	1.094E-04	4.607E-05	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	3.835E-04	3.808E-04	3.756E-04	3.575E-04	3.092E-04	1.724E-04	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	5.429E-10	1.619E-09	3.726E-09	1.064E-08	2.673E-08	4.911E-08	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		3.835E-04	3.808E-04	3.756E-04	3.575E-04	3.092E-04	1.724E-04	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	4.160E-09	1.241E-08	2.864E-08	8.266E-08	2.140E-07	4.379E-07	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	3.930E-15	2.734E-14	1.428E-13	1.225E-12	9.112E-12	5.928E-11	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		4.160E-09	1.241E-08	2.864E-08	8.266E-08	2.140E-07	4.379E-07	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM - AF 1 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.336E-10	9.323E-10	4.889E-09	4.249E-08	3.283E-07	2.457E-06	0.000E+00	0.000E+00
Ra-226	U-238	9.999E-01	9.463E-17	1.414E-15	1.636E-14	4.202E-13	9.334E-12	2.229E-10	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)		1.336E-10	9.323E-10	4.889E-09	4.249E-08	3.283E-07	2.457E-06	0.000E+00	0.000E+00
Pb-210	U-234	1.000E+00	6.674E-15	7.458E-14	7.011E-13	1.501E-11	2.759E-10	4.368E-09	0.000E+00	0.000E+00
Pb-210	U-238	9.999E-01	4.171E-21	9.519E-20	1.884E-18	1.159E-16	6.209E-15	3.356E-13	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		6.674E-15	7.458E-14	7.011E-13	1.501E-11	2.759E-10	4.369E-09	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	1.816E-08	1.804E-08	1.779E-08	1.693E-08	1.463E-08	8.137E-09	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	3.520E-03	3.500E-03	3.460E-03	3.322E-03	2.947E-03	1.828E-03	0.000E+00	0.000E+00
U-238	ΣDOSE(j)		3.520E-03	3.500E-03	3.460E-03	3.322E-03	2.947E-03	1.828E-03	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM - AF 1 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Summary : Hematite - Surface CSM - AF 1 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.68 seconds

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Summary : Hematite - Surface CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Surface CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Surface CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Surface CSM - AF 10 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Am-241	1.000E+00
Thickness:	0.15 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.498E-01	2.452E-01	2.362E-01	2.083E-01	1.520E-01	7.201E-02	0.000E+00	0.000E+00
M(t):	9.994E-03	9.807E-03	9.447E-03	8.333E-03	6.080E-03	2.881E-03	0.000E+00	0.000E+00

Maximum TDOSE(t): 2.498E-01 mrem/yr at t = 0.000E+00 years

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.679E-03	0.0227	1.546E-03	0.0062	0.000E+00	0.0000	4.024E-04	0.0016	2.667E-06	0.0000	3.818E-07	0.0000	5.153E-04	0.0021
Np-237	1.188E-01	0.4757	1.855E-03	0.0074	0.000E+00	0.0000	9.698E-03	0.0388	6.974E-05	0.0003	2.445E-06	0.0000	6.205E-04	0.0025
Pu-239	3.466E-05	0.0001	1.494E-03	0.0060	0.000E+00	0.0000	3.916E-04	0.0016	5.189E-06	0.0000	1.839E-07	0.0000	5.014E-04	0.0020
Pu-240	2.156E-05	0.0001	1.494E-03	0.0060	0.000E+00	0.0000	3.916E-04	0.0016	5.189E-06	0.0000	1.839E-07	0.0000	5.014E-04	0.0020
Tc-99	1.534E-05	0.0001	2.889E-08	0.0000	0.000E+00	0.0000	1.492E-03	0.0060	8.888E-08	0.0000	2.431E-06	0.0000	2.061E-07	0.0000
U-234	5.149E-05	0.0002	4.593E-04	0.0018	0.000E+00	0.0000	1.157E-04	0.0005	5.452E-06	0.0000	8.980E-06	0.0000	4.003E-05	0.0002
U-235	8.714E-02	0.3488	4.280E-04	0.0017	0.000E+00	0.0000	1.094E-04	0.0004	5.151E-06	0.0000	8.484E-06	0.0000	3.784E-05	0.0002
U-238	1.528E-02	0.0612	4.107E-04	0.0016	0.000E+00	0.0000	1.098E-04	0.0004	5.177E-06	0.0000	8.527E-06	0.0000	3.801E-05	0.0002
Total	2.271E-01	0.9088	7.687E-03	0.0308	0.000E+00	0.0000	1.271E-02	0.0509	9.865E-05	0.0004	3.162E-05	0.0001	2.255E-03	0.0090

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.145E-03	0.0326
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.311E-01	0.5247
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.427E-03	0.0097
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.414E-03	0.0097
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.510E-03	0.0060
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.809E-04	0.0027
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.772E-02	0.3511
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.585E-02	0.0634
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.498E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.668E-03	0.0231	1.537E-03	0.0063	0.000E+00	0.0000	4.001E-04	0.0016	2.651E-06	0.0000	3.797E-07	0.0000	5.123E-04	0.0021
Np-237	1.152E-01	0.4698	1.794E-03	0.0073	0.000E+00	0.0000	9.382E-03	0.0383	6.748E-05	0.0003	2.365E-06	0.0000	6.002E-04	0.0024
Pu-239	3.457E-05	0.0001	1.487E-03	0.0061	0.000E+00	0.0000	3.898E-04	0.0016	5.165E-06	0.0000	1.831E-07	0.0000	4.990E-04	0.0020
Pu-240	2.153E-05	0.0001	1.487E-03	0.0061	0.000E+00	0.0000	3.897E-04	0.0016	5.165E-06	0.0000	1.830E-07	0.0000	4.990E-04	0.0020
Tc-99	1.521E-05	0.0001	2.858E-08	0.0000	0.000E+00	0.0000	1.476E-03	0.0060	8.792E-08	0.0000	2.405E-06	0.0000	2.039E-07	0.0000
U-234	5.128E-05	0.0002	4.561E-04	0.0019	0.000E+00	0.0000	1.149E-04	0.0005	5.414E-06	0.0000	8.918E-06	0.0000	3.976E-05	0.0002
U-235	8.668E-02	0.3536	4.251E-04	0.0017	0.000E+00	0.0000	1.089E-04	0.0004	5.115E-06	0.0000	8.425E-06	0.0000	3.761E-05	0.0002
U-238	1.520E-02	0.0620	4.078E-04	0.0017	0.000E+00	0.0000	1.091E-04	0.0004	5.141E-06	0.0000	8.467E-06	0.0000	3.775E-05	0.0002
Total	2.228E-01	0.9090	7.595E-03	0.0310	0.000E+00	0.0000	1.237E-02	0.0505	9.622E-05	0.0004	3.133E-05	0.0001	2.226E-03	0.0091

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.120E-03	0.0331
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.270E-01	0.5181
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.416E-03	0.0099
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.403E-03	0.0098
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.494E-03	0.0061
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.763E-04	0.0028
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.727E-02	0.3560
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.577E-02	0.0643
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.452E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.646E-03	0.0239	1.520E-03	0.0064	0.000E+00	0.0000	3.956E-04	0.0017	2.621E-06	0.0000	3.753E-07	0.0000	5.065E-04	0.0021
Np-237	1.082E-01	0.4579	1.679E-03	0.0071	0.000E+00	0.0000	8.779E-03	0.0372	6.314E-05	0.0003	2.213E-06	0.0000	5.616E-04	0.0024
Pu-239	3.440E-05	0.0001	1.474E-03	0.0062	0.000E+00	0.0000	3.861E-04	0.0016	5.117E-06	0.0000	1.814E-07	0.0000	4.944E-04	0.0021
Pu-240	2.148E-05	0.0001	1.473E-03	0.0062	0.000E+00	0.0000	3.860E-04	0.0016	5.116E-06	0.0000	1.813E-07	0.0000	4.943E-04	0.0021
Tc-99	1.495E-05	0.0001	2.796E-08	0.0000	0.000E+00	0.0000	1.444E-03	0.0061	8.602E-08	0.0000	2.353E-06	0.0000	1.995E-07	0.0000
U-234	5.087E-05	0.0002	4.497E-04	0.0019	0.000E+00	0.0000	1.133E-04	0.0005	5.338E-06	0.0000	8.793E-06	0.0000	3.920E-05	0.0002
U-235	8.579E-02	0.3632	4.195E-04	0.0018	0.000E+00	0.0000	1.079E-04	0.0005	5.044E-06	0.0000	8.307E-06	0.0000	3.715E-05	0.0002
U-238	1.504E-02	0.0637	4.021E-04	0.0017	0.000E+00	0.0000	1.076E-04	0.0005	5.069E-06	0.0000	8.349E-06	0.0000	3.722E-05	0.0002
Total	2.147E-01	0.9093	7.416E-03	0.0314	0.000E+00	0.0000	1.172E-02	0.0496	9.153E-05	0.0004	3.075E-05	0.0001	2.171E-03	0.0092

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.070E-03	0.0342
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.192E-01	0.5049
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.394E-03	0.0101
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.380E-03	0.0101
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.462E-03	0.0062
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.672E-04	0.0028
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.636E-02	0.3657
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.560E-02	0.0660
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.362E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.570E-03	0.0267	1.459E-03	0.0070	0.000E+00	0.0000	3.798E-04	0.0018	2.517E-06	0.0000	3.604E-07	0.0000	4.863E-04	0.0023
Np-237	8.677E-02	0.4165	1.330E-03	0.0064	0.000E+00	0.0000	6.955E-03	0.0334	5.002E-05	0.0002	1.753E-06	0.0000	4.449E-04	0.0021
Pu-239	3.380E-05	0.0002	1.425E-03	0.0068	0.000E+00	0.0000	3.735E-04	0.0018	4.950E-06	0.0000	1.754E-07	0.0000	4.782E-04	0.0023
Pu-240	2.131E-05	0.0001	1.424E-03	0.0068	0.000E+00	0.0000	3.732E-04	0.0018	4.946E-06	0.0000	1.753E-07	0.0000	4.778E-04	0.0023
Tc-99	1.406E-05	0.0001	2.588E-08	0.0000	0.000E+00	0.0000	1.337E-03	0.0064	7.962E-08	0.0000	2.178E-06	0.0000	1.846E-07	0.0000
U-234	4.958E-05	0.0002	4.280E-04	0.0021	0.000E+00	0.0000	1.078E-04	0.0005	5.080E-06	0.0000	8.367E-06	0.0000	3.730E-05	0.0002
U-235	8.269E-02	0.3970	4.004E-04	0.0019	0.000E+00	0.0000	1.043E-04	0.0005	4.799E-06	0.0000	7.905E-06	0.0000	3.562E-05	0.0002
U-238	1.448E-02	0.0695	3.826E-04	0.0018	0.000E+00	0.0000	1.023E-04	0.0005	4.823E-06	0.0000	7.944E-06	0.0000	3.542E-05	0.0002
Total	1.896E-01	0.9103	6.849E-03	0.0329	0.000E+00	0.0000	9.732E-03	0.0467	7.721E-05	0.0004	2.886E-05	0.0001	1.996E-03	0.0096

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.898E-03	0.0379
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.555E-02	0.4587
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.316E-03	0.0111
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-03	0.0110
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.353E-03	0.0065
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.361E-04	0.0031
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.325E-02	0.3996
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.501E-02	0.0721
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.083E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.359E-03	0.0353	1.293E-03	0.0085	0.000E+00	0.0000	3.366E-04	0.0022	2.230E-06	0.0000	3.193E-07	0.0000	4.309E-04	0.0028
Np-237	4.610E-02	0.3033	6.801E-04	0.0045	0.000E+00	0.0000	3.557E-03	0.0234	2.558E-05	0.0002	8.972E-07	0.0000	2.275E-04	0.0015
Pu-239	3.208E-05	0.0002	1.290E-03	0.0085	0.000E+00	0.0000	3.379E-04	0.0022	4.479E-06	0.0000	1.587E-07	0.0000	4.327E-04	0.0028
Pu-240	2.083E-05	0.0001	1.287E-03	0.0085	0.000E+00	0.0000	3.371E-04	0.0022	4.468E-06	0.0000	1.584E-07	0.0000	4.317E-04	0.0028
Tc-99	1.180E-05	0.0001	2.065E-08	0.0000	0.000E+00	0.0000	1.067E-03	0.0070	6.353E-08	0.0000	1.738E-06	0.0000	1.473E-07	0.0000
U-234	4.696E-05	0.0003	3.696E-04	0.0024	0.000E+00	0.0000	9.307E-05	0.0006	4.385E-06	0.0000	7.223E-06	0.0000	3.222E-05	0.0002
U-235	7.427E-02	0.4886	3.512E-04	0.0023	0.000E+00	0.0000	9.455E-05	0.0006	4.144E-06	0.0000	6.826E-06	0.0000	3.164E-05	0.0002
U-238	1.296E-02	0.0853	3.304E-04	0.0022	0.000E+00	0.0000	8.836E-05	0.0006	4.164E-06	0.0000	6.859E-06	0.0000	3.058E-05	0.0002
Total	1.388E-01	0.9131	5.600E-03	0.0368	0.000E+00	0.0000	5.911E-03	0.0389	4.951E-05	0.0003	2.418E-05	0.0002	1.617E-03	0.0106

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.421E-03	0.0488
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.059E-02	0.3328
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.097E-03	0.0138
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.081E-03	0.0137
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.080E-03	0.0071
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.535E-04	0.0036
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.476E-02	0.4918
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.342E-02	0.0883
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.520E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.654E-03	0.0646	7.821E-04	0.0109	0.000E+00	0.0000	2.037E-04	0.0028	1.350E-06	0.0000	1.932E-07	0.0000	2.607E-04	0.0036
Np-237	4.775E-03	0.0663	6.014E-05	0.0008	0.000E+00	0.0000	3.144E-04	0.0044	2.261E-06	0.0000	7.987E-08	0.0000	2.011E-05	0.0003
Pu-239	2.572E-05	0.0004	8.398E-04	0.0117	0.000E+00	0.0000	2.201E-04	0.0031	2.917E-06	0.0000	1.034E-07	0.0000	2.817E-04	0.0039
Pu-240	1.919E-05	0.0003	8.333E-04	0.0116	0.000E+00	0.0000	2.184E-04	0.0030	2.894E-06	0.0000	1.026E-07	0.0000	2.796E-04	0.0039
Tc-99	6.209E-06	0.0001	8.657E-09	0.0000	0.000E+00	0.0000	4.473E-04	0.0062	2.665E-08	0.0000	7.289E-07	0.0000	6.177E-08	0.0000
U-234	4.535E-05	0.0006	2.046E-04	0.0028	0.000E+00	0.0000	5.156E-05	0.0007	2.424E-06	0.0000	3.992E-06	0.0001	1.783E-05	0.0002
U-235	4.854E-02	0.6740	2.129E-04	0.0030	0.000E+00	0.0000	6.246E-05	0.0009	2.294E-06	0.0000	3.775E-06	0.0001	2.003E-05	0.0003
U-238	8.342E-03	0.1158	1.826E-04	0.0025	0.000E+00	0.0000	4.883E-05	0.0007	2.302E-06	0.0000	3.791E-06	0.0001	1.690E-05	0.0002
Total	6.641E-02	0.9221	3.115E-03	0.0433	0.000E+00	0.0000	1.567E-03	0.0218	1.647E-05	0.0002	1.277E-05	0.0002	8.970E-04	0.0125

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.902E-03	0.0820
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.172E-03	0.0718
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.370E-03	0.0190
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.353E-03	0.0188
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.543E-04	0.0063
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.258E-04	0.0045
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.884E-02	0.6782
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.596E-03	0.1194
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.201E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	8.145E-03	8.120E-03	8.070E-03	7.898E-03	7.421E-03	5.901E-03	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	2.122E-08	6.284E-08	1.417E-07	3.765E-07	7.822E-07	9.039E-07	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	1.998E-16	1.339E-15	6.779E-15	5.431E-14	3.424E-13	1.401E-12	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	9.823E-19	1.459E-17	1.667E-16	4.101E-15	8.122E-14	1.413E-12	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		8.145E-03	8.120E-03	8.070E-03	7.898E-03	7.421E-03	5.902E-03	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	1.311E-01	1.270E-01	1.192E-01	9.555E-02	5.059E-02	5.172E-03	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	1.813E-09	5.216E-09	1.162E-08	3.031E-08	6.034E-08	5.858E-08	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	1.211E-11	8.380E-11	4.318E-10	3.530E-09	2.316E-08	1.105E-07	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		1.311E-01	1.270E-01	1.192E-01	9.555E-02	5.059E-02	5.172E-03	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	2.427E-03	2.416E-03	2.394E-03	2.316E-03	2.097E-03	1.370E-03	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	4.319E-11	1.291E-10	2.989E-10	8.713E-10	2.326E-09	5.421E-09	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	1.300E-16	9.159E-16	4.820E-15	4.186E-14	3.213E-13	2.350E-12	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	6.778E-18	1.003E-16	1.142E-15	2.794E-14	5.461E-13	9.226E-12	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		2.427E-03	2.416E-03	2.394E-03	2.316E-03	2.097E-03	1.370E-03	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	1.195E-10	1.189E-10	1.178E-10	1.139E-10	1.030E-10	6.699E-11	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	2.414E-03	2.403E-03	2.380E-03	2.302E-03	2.081E-03	1.353E-03	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	9.177E-12	2.754E-11	6.366E-11	1.835E-10	4.727E-10	9.509E-10	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	1.593E-21	1.102E-20	5.748E-20	4.947E-19	3.730E-18	2.543E-17	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	4.067E-21	5.939E-20	6.515E-19	1.399E-17	2.062E-16	2.214E-15	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	4.280E-22	1.218E-20	2.576E-19	1.149E-17	2.525E-16	3.137E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		2.414E-03	2.403E-03	2.380E-03	2.302E-03	2.081E-03	1.353E-03	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.510E-03	1.494E-03	1.462E-03	1.353E-03	1.080E-03	4.543E-04	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	6.809E-04	6.763E-04	6.671E-04	6.357E-04	5.515E-04	3.126E-04	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	6.447E-09	1.916E-08	4.417E-08	1.276E-07	3.317E-07	6.949E-07	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	6.637E-10	4.633E-09	2.431E-08	2.115E-07	1.639E-06	1.244E-05	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	5.949E-14	6.381E-13	5.782E-12	1.199E-10	2.163E-09	3.305E-08	0.000E+00	0.000E+00
U-234	ΣDSR (j)		6.809E-04	6.763E-04	6.672E-04	6.361E-04	5.535E-04	3.258E-04	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	8.772E-02	8.727E-02	8.636E-02	8.323E-02	7.468E-02	4.857E-02	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	3.988E-07	1.200E-06	2.779E-06	8.065E-06	2.117E-05	4.587E-05	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	2.744E-08	1.892E-07	9.709E-07	7.860E-06	5.037E-05	2.261E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		8.772E-02	8.727E-02	8.636E-02	8.325E-02	7.476E-02	4.884E-02	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	3.129E-08	3.107E-08	3.065E-08	2.918E-08	2.526E-08	1.416E-08	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	1.585E-02	1.577E-02	1.560E-02	1.501E-02	1.342E-02	8.596E-03	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	9.640E-10	2.875E-09	6.618E-09	1.892E-08	4.769E-08	8.907E-08	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	6.114E-15	4.230E-14	2.205E-13	1.891E-12	1.413E-11	9.408E-11	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	4.699E-16	7.027E-15	8.132E-14	2.091E-12	4.661E-11	1.129E-09	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	3.758E-20	8.255E-19	1.571E-17	9.317E-16	4.882E-14	2.542E-12	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		1.585E-02	1.577E-02	1.560E-02	1.501E-02	1.342E-02	8.596E-03	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		3.069E+03	3.079E+03	3.098E+03	3.165E+03	3.369E+03	4.236E+03	*3.431E+12	*3.431E+12
Np-237		1.907E+02	1.968E+02	2.097E+02	2.616E+02	4.942E+02	4.833E+03	*7.047E+08	*7.047E+08
Pu-239		1.030E+04	1.035E+04	1.044E+04	1.079E+04	1.192E+04	1.824E+04	*6.214E+10	*6.214E+10
Pu-240		1.036E+04	1.040E+04	1.050E+04	1.086E+04	1.201E+04	1.847E+04	*2.278E+11	*2.278E+11
Tc-99		1.655E+04	1.673E+04	1.710E+04	1.847E+04	2.314E+04	5.503E+04	*1.697E+10	*1.697E+10
U-234		3.672E+04	3.696E+04	3.747E+04	3.930E+04	4.517E+04	7.675E+04	*6.247E+09	*6.247E+09
U-235		2.850E+02	2.865E+02	2.895E+02	3.003E+02	3.344E+02	5.119E+02	*2.161E+06	*2.161E+06
U-238		1.577E+03	1.586E+03	1.603E+03	1.665E+03	1.862E+03	2.908E+03	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	8.145E-03	3.069E+03	8.145E-03	3.069E+03
Np-237	1.000E+00	0.000E+00	1.311E-01	1.907E+02	1.311E-01	1.907E+02
Pu-239	1.000E+00	0.000E+00	2.427E-03	1.030E+04	2.427E-03	1.030E+04
Pu-240	1.000E+00	0.000E+00	2.414E-03	1.036E+04	2.414E-03	1.036E+04
Tc-99	1.000E+00	0.000E+00	1.510E-03	1.655E+04	1.510E-03	1.655E+04
U-234	1.000E+00	0.000E+00	6.809E-04	3.672E+04	6.809E-04	3.672E+04
U-235	1.000E+00	0.000E+00	8.772E-02	2.850E+02	8.772E-02	2.850E+02
U-238	1.000E+00	0.000E+00	1.585E-02	1.577E+03	1.585E-02	1.577E+03

Summary : Hematite - Surface CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	8.145E-03	8.120E-03	8.070E-03	7.898E-03	7.421E-03	5.901E-03	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	2.122E-08	6.284E-08	1.417E-07	3.765E-07	7.822E-07	9.039E-07	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	1.311E-01	1.270E-01	1.192E-01	9.555E-02	5.059E-02	5.172E-03	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		1.311E-01	1.270E-01	1.192E-01	9.555E-02	5.059E-02	5.173E-03	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	1.998E-16	1.339E-15	6.779E-15	5.431E-14	3.424E-13	1.401E-12	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	1.813E-09	5.216E-09	1.162E-08	3.031E-08	6.034E-08	5.858E-08	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		1.813E-09	5.216E-09	1.162E-08	3.031E-08	6.034E-08	5.858E-08	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	9.823E-19	1.459E-17	1.667E-16	4.101E-15	8.122E-14	1.413E-12	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	1.211E-11	8.380E-11	4.318E-10	3.530E-09	2.316E-08	1.105E-07	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		1.211E-11	8.380E-11	4.318E-10	3.530E-09	2.316E-08	1.105E-07	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	2.427E-03	2.416E-03	2.394E-03	2.316E-03	2.097E-03	1.370E-03	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	4.319E-11	1.291E-10	2.989E-10	8.713E-10	2.326E-09	5.421E-09	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	8.772E-02	8.727E-02	8.636E-02	8.323E-02	7.468E-02	4.857E-02	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		8.772E-02	8.727E-02	8.636E-02	8.323E-02	7.468E-02	4.857E-02	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	1.300E-16	9.159E-16	4.820E-15	4.186E-14	3.213E-13	2.350E-12	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	3.988E-07	1.200E-06	2.779E-06	8.065E-06	2.117E-05	4.587E-05	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		3.988E-07	1.200E-06	2.779E-06	8.065E-06	2.117E-05	4.587E-05	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	6.778E-18	1.003E-16	1.142E-15	2.794E-14	5.461E-13	9.226E-12	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	2.744E-08	1.892E-07	9.709E-07	7.860E-06	5.037E-05	2.261E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		2.744E-08	1.892E-07	9.709E-07	7.860E-06	5.037E-05	2.261E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	1.195E-10	1.189E-10	1.178E-10	1.139E-10	1.030E-10	6.699E-11	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	2.414E-03	2.403E-03	2.380E-03	2.302E-03	2.081E-03	1.353E-03	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		2.414E-03	2.403E-03	2.380E-03	2.302E-03	2.081E-03	1.353E-03	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	9.177E-12	2.754E-11	6.366E-11	1.835E-10	4.727E-10	9.509E-10	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	1.593E-21	1.102E-20	5.748E-20	4.947E-19	3.730E-18	2.543E-17	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	4.067E-21	5.939E-20	6.515E-19	1.399E-17	2.062E-16	2.214E-15	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	4.280E-22	1.218E-20	2.576E-19	1.149E-17	2.525E-16	3.137E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.510E-03	1.494E-03	1.462E-03	1.353E-03	1.080E-03	4.543E-04	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	6.809E-04	6.763E-04	6.671E-04	6.357E-04	5.515E-04	3.126E-04	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	9.640E-10	2.875E-09	6.618E-09	1.892E-08	4.769E-08	8.907E-08	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		6.809E-04	6.763E-04	6.671E-04	6.358E-04	5.516E-04	3.127E-04	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	6.447E-09	1.916E-08	4.417E-08	1.276E-07	3.317E-07	6.949E-07	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	6.114E-15	4.230E-14	2.205E-13	1.891E-12	1.413E-11	9.408E-11	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		6.447E-09	1.916E-08	4.417E-08	1.276E-07	3.318E-07	6.950E-07	0.000E+00	0.000E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	6.637E-10	4.633E-09	2.431E-08	2.115E-07	1.639E-06	1.244E-05	0.000E+00	0.000E+00
Ra-226	U-238	9.999E-01	4.699E-16	7.027E-15	8.132E-14	2.091E-12	4.661E-11	1.129E-09	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)		6.637E-10	4.633E-09	2.431E-08	2.115E-07	1.639E-06	1.244E-05	0.000E+00	0.000E+00
Pb-210	U-234	1.000E+00	5.949E-14	6.381E-13	5.782E-12	1.199E-10	2.163E-09	3.305E-08	0.000E+00	0.000E+00
Pb-210	U-238	9.999E-01	3.758E-20	8.255E-19	1.571E-17	9.317E-16	4.882E-14	2.542E-12	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		5.949E-14	6.381E-13	5.782E-12	1.199E-10	2.164E-09	3.305E-08	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	3.129E-08	3.107E-08	3.065E-08	2.918E-08	2.526E-08	1.416E-08	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	1.585E-02	1.577E-02	1.560E-02	1.501E-02	1.342E-02	8.596E-03	0.000E+00	0.000E+00
U-238	ΣDOSE(j)		1.585E-02	1.577E-02	1.560E-02	1.501E-02	1.342E-02	8.596E-03	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.61 seconds

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Time = 3.000E+00	17
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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Surface CSM - AF 100 m^2

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Attach 4 to HEM-11-91

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Surface CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Surface CSM - AF 100 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Surface CSM - AF 100 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Surface CSM - AF 100 m^2

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	100.00 square meters	Am-241	1.000E+00
Thickness:	0.15 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.653E-01	5.543E-01	5.332E-01	4.681E-01	3.376E-01	1.610E-01	0.000E+00	0.000E+00
M(t):	2.261E-02	2.217E-02	2.133E-02	1.872E-02	1.351E-02	6.441E-03	0.000E+00	0.000E+00

Maximum TDOSE(t): 5.653E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.164E-03	0.0162	1.996E-03	0.0035	0.000E+00	0.0000	4.024E-03	0.0071	2.667E-05	0.0000	3.818E-06	0.0000	5.153E-03	0.0091
Np-237	2.138E-01	0.3782	2.395E-03	0.0042	0.000E+00	0.0000	9.698E-02	0.1716	6.974E-04	0.0012	2.445E-05	0.0000	6.205E-03	0.0110
Pu-239	6.033E-05	0.0001	1.930E-03	0.0034	0.000E+00	0.0000	3.916E-03	0.0069	5.189E-05	0.0001	1.839E-06	0.0000	5.014E-03	0.0089
Pu-240	3.308E-05	0.0001	1.930E-03	0.0034	0.000E+00	0.0000	3.916E-03	0.0069	5.189E-05	0.0001	1.839E-06	0.0000	5.014E-03	0.0089
Tc-99	2.618E-05	0.0000	3.731E-08	0.0000	0.000E+00	0.0000	1.492E-02	0.0264	8.888E-07	0.0000	2.431E-05	0.0000	2.061E-06	0.0000
U-234	8.504E-05	0.0002	5.931E-04	0.0010	0.000E+00	0.0000	1.157E-03	0.0020	5.452E-05	0.0001	8.980E-05	0.0002	4.003E-04	0.0007
U-235	1.530E-01	0.2706	5.528E-04	0.0010	0.000E+00	0.0000	1.094E-03	0.0019	5.151E-05	0.0001	8.484E-05	0.0002	3.784E-04	0.0007
U-238	2.825E-02	0.0500	5.304E-04	0.0009	0.000E+00	0.0000	1.098E-03	0.0019	5.177E-05	0.0001	8.527E-05	0.0002	3.801E-04	0.0007
Total	4.044E-01	0.7154	9.928E-03	0.0176	0.000E+00	0.0000	1.271E-01	0.2248	9.865E-04	0.0017	3.162E-04	0.0006	2.255E-02	0.0399

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.037E-02	0.0360
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.201E-01	0.5663
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.097E-02	0.0194
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.095E-02	0.0194
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.498E-02	0.0265
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.380E-03	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.551E-01	0.2744
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.040E-02	0.0538
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.653E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.149E-03	0.0165	1.985E-03	0.0036	0.000E+00	0.0000	4.002E-03	0.0072	2.651E-05	0.0000	3.797E-06	0.0000	5.123E-03	0.0092
Np-237	2.074E-01	0.3742	2.317E-03	0.0042	0.000E+00	0.0000	9.382E-02	0.1693	6.748E-04	0.0012	2.365E-05	0.0000	6.002E-03	0.0108
Pu-239	6.024E-05	0.0001	1.921E-03	0.0035	0.000E+00	0.0000	3.898E-03	0.0070	5.165E-05	0.0001	1.831E-06	0.0000	4.990E-03	0.0090
Pu-240	3.305E-05	0.0001	1.921E-03	0.0035	0.000E+00	0.0000	3.897E-03	0.0070	5.165E-05	0.0001	1.830E-06	0.0000	4.990E-03	0.0090
Tc-99	2.598E-05	0.0000	3.691E-08	0.0000	0.000E+00	0.0000	1.476E-02	0.0266	8.792E-07	0.0000	2.405E-05	0.0000	2.039E-06	0.0000
U-234	8.476E-05	0.0002	5.890E-04	0.0011	0.000E+00	0.0000	1.149E-03	0.0021	5.414E-05	0.0001	8.918E-05	0.0002	3.976E-04	0.0007
U-235	1.524E-01	0.2749	5.490E-04	0.0010	0.000E+00	0.0000	1.089E-03	0.0020	5.115E-05	0.0001	8.425E-05	0.0002	3.761E-04	0.0007
U-238	2.813E-02	0.0507	5.267E-04	0.0010	0.000E+00	0.0000	1.091E-03	0.0020	5.141E-05	0.0001	8.467E-05	0.0002	3.775E-04	0.0007
Total	3.973E-01	0.7167	9.808E-03	0.0177	0.000E+00	0.0000	1.237E-01	0.2232	9.622E-04	0.0017	3.133E-04	0.0006	2.226E-02	0.0402

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.029E-02	0.0366
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.103E-01	0.5597
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.092E-02	0.0197
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.089E-02	0.0197
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.481E-02	0.0267
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.363E-03	0.0043
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.545E-01	0.2787
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.026E-02	0.0546
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.543E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 100 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.118E-03	0.0171	1.962E-03	0.0037	0.000E+00	0.0000	3.956E-03	0.0074	2.621E-05	0.0000	3.753E-06	0.0000	5.065E-03	0.0095
Np-237	1.952E-01	0.3660	2.168E-03	0.0041	0.000E+00	0.0000	8.780E-02	0.1646	6.314E-04	0.0012	2.213E-05	0.0000	5.616E-03	0.0105
Pu-239	6.005E-05	0.0001	1.903E-03	0.0036	0.000E+00	0.0000	3.861E-03	0.0072	5.117E-05	0.0001	1.814E-06	0.0000	4.944E-03	0.0093
Pu-240	3.300E-05	0.0001	1.903E-03	0.0036	0.000E+00	0.0000	3.860E-03	0.0072	5.116E-05	0.0001	1.813E-06	0.0000	4.943E-03	0.0093
Tc-99	2.560E-05	0.0000	3.611E-08	0.0000	0.000E+00	0.0000	1.444E-02	0.0271	8.602E-07	0.0000	2.353E-05	0.0000	1.995E-06	0.0000
U-234	8.422E-05	0.0002	5.808E-04	0.0011	0.000E+00	0.0000	1.133E-03	0.0021	5.339E-05	0.0001	8.793E-05	0.0002	3.920E-04	0.0007
U-235	1.512E-01	0.2835	5.417E-04	0.0010	0.000E+00	0.0000	1.079E-03	0.0020	5.044E-05	0.0001	8.307E-05	0.0002	3.715E-04	0.0007
U-238	2.787E-02	0.0523	5.193E-04	0.0010	0.000E+00	0.0000	1.076E-03	0.0020	5.069E-05	0.0001	8.349E-05	0.0002	3.722E-04	0.0007
Total	3.835E-01	0.7193	9.578E-03	0.0180	0.000E+00	0.0000	1.172E-01	0.2198	9.153E-04	0.0017	3.075E-04	0.0006	2.171E-02	0.0407

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.013E-02	0.0378
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.914E-01	0.5465
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.082E-02	0.0203
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.079E-02	0.0202
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.449E-02	0.0272
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.331E-03	0.0044
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.533E-01	0.2874
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.998E-02	0.0562
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.332E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.011E-03	0.0193	1.884E-03	0.0040	0.000E+00	0.0000	3.799E-03	0.0081	2.517E-05	0.0001	3.604E-06	0.0000	4.863E-03	0.0104
Np-237	1.577E-01	0.3369	1.717E-03	0.0037	0.000E+00	0.0000	6.955E-02	0.1486	5.002E-04	0.0011	1.753E-05	0.0000	4.449E-03	0.0095
Pu-239	5.937E-05	0.0001	1.841E-03	0.0039	0.000E+00	0.0000	3.735E-03	0.0080	4.950E-05	0.0001	1.754E-06	0.0000	4.782E-03	0.0102
Pu-240	3.280E-05	0.0001	1.839E-03	0.0039	0.000E+00	0.0000	3.732E-03	0.0080	4.946E-05	0.0001	1.753E-06	0.0000	4.778E-03	0.0102
Tc-99	2.428E-05	0.0001	3.342E-08	0.0000	0.000E+00	0.0000	1.337E-02	0.0286	7.962E-07	0.0000	2.178E-05	0.0000	1.846E-06	0.0000
U-234	8.260E-05	0.0002	5.527E-04	0.0012	0.000E+00	0.0000	1.078E-03	0.0023	5.080E-05	0.0001	8.367E-05	0.0002	3.730E-04	0.0008
U-235	1.470E-01	0.3140	5.171E-04	0.0011	0.000E+00	0.0000	1.043E-03	0.0022	4.799E-05	0.0001	7.905E-05	0.0002	3.562E-04	0.0008
U-238	2.700E-02	0.0577	4.942E-04	0.0011	0.000E+00	0.0000	1.023E-03	0.0022	4.823E-05	0.0001	7.944E-05	0.0002	3.542E-04	0.0008
Total	3.409E-01	0.7283	8.846E-03	0.0189	0.000E+00	0.0000	9.732E-02	0.2079	7.721E-04	0.0016	2.886E-04	0.0006	1.996E-02	0.0426

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.959E-02	0.0418
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.339E-01	0.4998
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.047E-02	0.0224
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.043E-02	0.0223
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.342E-02	0.0287
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.221E-03	0.0047
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.490E-01	0.3183
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.900E-02	0.0620
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.681E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.711E-03	0.0258	1.669E-03	0.0049	0.000E+00	0.0000	3.366E-03	0.0100	2.230E-05	0.0001	3.193E-06	0.0000	4.309E-03	0.0128
Np-237	8.556E-02	0.2534	8.783E-04	0.0026	0.000E+00	0.0000	3.557E-02	0.1053	2.558E-04	0.0008	8.972E-06	0.0000	2.275E-03	0.0067
Pu-239	5.739E-05	0.0002	1.666E-03	0.0049	0.000E+00	0.0000	3.379E-03	0.0100	4.479E-05	0.0001	1.587E-06	0.0000	4.327E-03	0.0128
Pu-240	3.223E-05	0.0001	1.662E-03	0.0049	0.000E+00	0.0000	3.372E-03	0.0100	4.468E-05	0.0001	1.584E-06	0.0000	4.317E-03	0.0128
Tc-99	2.088E-05	0.0001	2.666E-08	0.0000	0.000E+00	0.0000	1.067E-02	0.0316	6.353E-07	0.0000	1.738E-05	0.0001	1.473E-06	0.0000
U-234	7.991E-05	0.0002	4.774E-04	0.0014	0.000E+00	0.0000	9.307E-04	0.0028	4.385E-05	0.0001	7.223E-05	0.0002	3.222E-04	0.0010
U-235	1.353E-01	0.4009	4.536E-04	0.0013	0.000E+00	0.0000	9.455E-04	0.0028	4.144E-05	0.0001	6.826E-05	0.0002	3.164E-04	0.0009
U-238	2.458E-02	0.0728	4.266E-04	0.0013	0.000E+00	0.0000	8.836E-04	0.0026	4.164E-05	0.0001	6.859E-05	0.0002	3.058E-04	0.0009
Total	2.544E-01	0.7534	7.232E-03	0.0214	0.000E+00	0.0000	5.911E-02	0.1751	4.951E-04	0.0015	2.418E-04	0.0007	1.617E-02	0.0479

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.808E-02	0.0536
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.245E-01	0.3689
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.476E-03	0.0281
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.428E-03	0.0279
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.071E-02	0.0317
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.926E-03	0.0057
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.372E-01	0.4063
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.631E-02	0.0779
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.376E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.697E-03	0.0478	1.010E-03	0.0063	0.000E+00	0.0000	2.037E-03	0.0127	1.350E-05	0.0001	1.932E-06	0.0000	2.607E-03	0.0162
Np-237	9.623E-03	0.0598	7.767E-05	0.0005	0.000E+00	0.0000	3.144E-03	0.0195	2.261E-05	0.0001	7.987E-07	0.0000	2.011E-04	0.0012
Pu-239	4.927E-05	0.0003	1.085E-03	0.0067	0.000E+00	0.0000	2.201E-03	0.0137	2.917E-05	0.0002	1.034E-06	0.0000	2.817E-03	0.0175
Pu-240	3.020E-05	0.0002	1.076E-03	0.0067	0.000E+00	0.0000	2.184E-03	0.0136	2.894E-05	0.0002	1.026E-06	0.0000	2.796E-03	0.0174
Tc-99	1.209E-05	0.0001	1.118E-08	0.0000	0.000E+00	0.0000	4.473E-03	0.0278	2.665E-07	0.0000	7.289E-06	0.0000	6.177E-07	0.0000
U-234	8.509E-05	0.0005	2.642E-04	0.0016	0.000E+00	0.0000	5.156E-04	0.0032	2.424E-05	0.0002	3.992E-05	0.0002	1.783E-04	0.0011
U-235	9.768E-02	0.6067	2.750E-04	0.0017	0.000E+00	0.0000	6.246E-04	0.0039	2.294E-05	0.0001	3.775E-05	0.0002	2.003E-04	0.0012
U-238	1.689E-02	0.1049	2.358E-04	0.0015	0.000E+00	0.0000	4.884E-04	0.0030	2.302E-05	0.0001	3.791E-05	0.0002	1.690E-04	0.0010
Total	1.321E-01	0.8202	4.023E-03	0.0250	0.000E+00	0.0000	1.567E-02	0.0973	1.647E-04	0.0010	1.277E-04	0.0008	8.970E-03	0.0557

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.337E-02	0.0830
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.307E-02	0.0812
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.182E-03	0.0384
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.116E-03	0.0380
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.493E-03	0.0279
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.107E-03	0.0069
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.884E-02	0.6139
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.784E-02	0.1108
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.610E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 100 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.037E-02	2.029E-02	2.013E-02	1.958E-02	1.808E-02	1.336E-02	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	5.113E-08	1.527E-07	3.456E-07	9.212E-07	1.925E-06	2.283E-06	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	7.261E-16	4.597E-15	2.263E-14	1.784E-13	1.117E-12	4.537E-12	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	1.815E-18	2.689E-17	3.073E-16	7.604E-15	1.534E-13	2.869E-12	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		2.037E-02	2.029E-02	2.013E-02	1.959E-02	1.808E-02	1.337E-02	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	3.201E-01	3.103E-01	2.914E-01	2.339E-01	1.245E-01	1.307E-02	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	6.364E-09	1.749E-08	3.832E-08	9.913E-08	1.965E-07	1.896E-07	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	2.235E-11	1.544E-10	7.960E-10	6.544E-09	4.373E-08	2.244E-07	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		3.201E-01	3.103E-01	2.914E-01	2.339E-01	1.245E-01	1.307E-02	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	1.097E-02	1.092E-02	1.082E-02	1.047E-02	9.475E-03	6.182E-03	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	7.638E-11	2.286E-10	5.304E-10	1.559E-09	4.265E-09	1.096E-08	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	5.850E-16	4.169E-15	2.204E-14	1.915E-13	1.461E-12	1.042E-11	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	1.315E-17	1.918E-16	2.170E-15	5.313E-14	1.055E-12	1.906E-11	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		1.097E-02	1.092E-02	1.082E-02	1.047E-02	9.476E-03	6.182E-03	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	5.418E-10	5.393E-10	5.342E-10	5.164E-10	4.667E-10	3.027E-10	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	1.095E-02	1.089E-02	1.079E-02	1.043E-02	9.428E-03	6.116E-03	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	3.213E-11	9.741E-11	2.258E-10	6.519E-10	1.677E-09	3.346E-09	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	3.700E-21	2.501E-20	1.291E-19	1.104E-18	8.310E-18	5.658E-17	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	8.361E-21	1.228E-19	1.352E-18	2.920E-17	4.362E-16	4.942E-15	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	8.335E-22	2.370E-20	5.011E-19	2.244E-17	5.007E-16	6.608E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		1.095E-02	1.089E-02	1.079E-02	1.043E-02	9.428E-03	6.116E-03	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.498E-02	1.481E-02	1.449E-02	1.342E-02	1.071E-02	4.493E-03	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	2.380E-03	2.363E-03	2.331E-03	2.220E-03	1.922E-03	1.079E-03	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	1.445E-08	4.221E-08	9.678E-08	2.787E-07	7.242E-07	1.517E-06	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	1.327E-09	9.289E-09	4.885E-08	4.272E-07	3.360E-06	2.699E-05	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	5.615E-13	5.884E-12	5.213E-11	1.058E-09	1.882E-08	2.769E-07	0.000E+00	0.000E+00
U-234	ΣDSR (j)		2.380E-03	2.363E-03	2.331E-03	2.221E-03	1.926E-03	1.107E-03	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	1.551E-01	1.545E-01	1.533E-01	1.489E-01	1.370E-01	9.817E-02	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	1.808E-06	5.485E-06	1.273E-05	3.692E-05	9.629E-05	2.035E-04	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	5.289E-08	3.601E-07	1.840E-06	1.493E-05	9.723E-05	4.672E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		1.551E-01	1.545E-01	1.533E-01	1.490E-01	1.372E-01	9.884E-02	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	1.127E-07	1.119E-07	1.103E-07	1.050E-07	9.077E-08	5.046E-08	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	3.040E-02	3.026E-02	2.998E-02	2.900E-02	2.631E-02	1.784E-02	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	3.369E-09	1.005E-08	2.312E-08	6.607E-08	1.662E-07	3.073E-07	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	1.391E-14	9.403E-14	4.850E-13	4.137E-12	3.086E-11	2.054E-10	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	9.386E-16	1.408E-14	1.634E-13	4.224E-12	9.551E-11	2.448E-09	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	3.568E-19	7.672E-18	1.427E-16	8.258E-15	4.254E-13	2.131E-11	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		3.040E-02	3.026E-02	2.998E-02	2.900E-02	2.631E-02	1.784E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Am-241		1.227E+03	1.232E+03	1.242E+03	1.276E+03	1.383E+03	1.870E+03	*3.431E+12	*3.431E+12
Np-237		7.809E+01	8.057E+01	8.579E+01	1.069E+02	2.007E+02	1.913E+03	*7.047E+08	*7.047E+08
Pu-239		2.278E+03	2.289E+03	2.310E+03	2.388E+03	2.638E+03	4.044E+03	*6.214E+10	*6.214E+10
Pu-240		2.284E+03	2.295E+03	2.317E+03	2.396E+03	2.652E+03	4.088E+03	*2.278E+11	*2.278E+11
Tc-99		1.669E+03	1.688E+03	1.725E+03	1.864E+03	2.335E+03	5.564E+03	*1.697E+10	*1.697E+10
U-234		1.051E+04	1.058E+04	1.072E+04	1.126E+04	1.298E+04	2.257E+04	*6.247E+09	*6.247E+09
U-235		1.611E+02	1.618E+02	1.631E+02	1.678E+02	1.823E+02	2.529E+02	*2.161E+06	*2.161E+06
U-238		8.224E+02	8.262E+02	8.340E+02	8.621E+02	9.503E+02	1.401E+03	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Am-241	1.000E+00	0.000E+00	2.037E-02	1.227E+03	2.037E-02	1.227E+03
Np-237	1.000E+00	0.000E+00	3.201E-01	7.809E+01	3.201E-01	7.809E+01
Pu-239	1.000E+00	0.000E+00	1.097E-02	2.278E+03	1.097E-02	2.278E+03
Pu-240	1.000E+00	0.000E+00	1.095E-02	2.284E+03	1.095E-02	2.284E+03
Tc-99	1.000E+00	0.000E+00	1.498E-02	1.669E+03	1.498E-02	1.669E+03
U-234	1.000E+00	0.000E+00	2.380E-03	1.051E+04	2.380E-03	1.051E+04
U-235	1.000E+00	0.000E+00	1.551E-01	1.611E+02	1.551E-01	1.611E+02
U-238	1.000E+00	0.000E+00	3.040E-02	8.224E+02	3.040E-02	8.224E+02

Summary : Hematite - Surface CSM - AF 100 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.037E-02	2.029E-02	2.013E-02	1.958E-02	1.808E-02	1.336E-02	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	5.113E-08	1.527E-07	3.456E-07	9.212E-07	1.925E-06	2.283E-06	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	3.201E-01	3.103E-01	2.914E-01	2.339E-01	1.245E-01	1.307E-02	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		3.201E-01	3.103E-01	2.914E-01	2.339E-01	1.246E-01	1.307E-02	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	7.261E-16	4.597E-15	2.263E-14	1.784E-13	1.117E-12	4.537E-12	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	6.364E-09	1.749E-08	3.832E-08	9.913E-08	1.965E-07	1.896E-07	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		6.364E-09	1.749E-08	3.832E-08	9.913E-08	1.965E-07	1.896E-07	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	1.815E-18	2.689E-17	3.073E-16	7.604E-15	1.534E-13	2.869E-12	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	2.235E-11	1.544E-10	7.960E-10	6.544E-09	4.373E-08	2.244E-07	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		2.235E-11	1.544E-10	7.960E-10	6.544E-09	4.373E-08	2.244E-07	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	1.097E-02	1.092E-02	1.082E-02	1.047E-02	9.475E-03	6.182E-03	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	7.638E-11	2.286E-10	5.304E-10	1.559E-09	4.265E-09	1.096E-08	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	1.551E-01	1.545E-01	1.533E-01	1.489E-01	1.370E-01	9.817E-02	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		1.551E-01	1.545E-01	1.533E-01	1.489E-01	1.370E-01	9.817E-02	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	5.850E-16	4.169E-15	2.204E-14	1.915E-13	1.461E-12	1.042E-11	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	1.808E-06	5.485E-06	1.273E-05	3.692E-05	9.629E-05	2.035E-04	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		1.808E-06	5.485E-06	1.273E-05	3.692E-05	9.629E-05	2.035E-04	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	1.315E-17	1.918E-16	2.170E-15	5.313E-14	1.055E-12	1.906E-11	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	5.289E-08	3.601E-07	1.840E-06	1.493E-05	9.723E-05	4.672E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		5.289E-08	3.601E-07	1.840E-06	1.493E-05	9.723E-05	4.672E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	5.418E-10	5.393E-10	5.342E-10	5.164E-10	4.667E-10	3.027E-10	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	1.095E-02	1.089E-02	1.079E-02	1.043E-02	9.428E-03	6.116E-03	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		1.095E-02	1.089E-02	1.079E-02	1.043E-02	9.428E-03	6.116E-03	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	3.213E-11	9.741E-11	2.258E-10	6.519E-10	1.677E-09	3.346E-09	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	3.700E-21	2.501E-20	1.291E-19	1.104E-18	8.310E-18	5.658E-17	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	8.361E-21	1.228E-19	1.352E-18	2.920E-17	4.362E-16	4.942E-15	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	8.335E-22	2.370E-20	5.011E-19	2.244E-17	5.007E-16	6.608E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.498E-02	1.481E-02	1.449E-02	1.342E-02	1.071E-02	4.493E-03	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	2.380E-03	2.363E-03	2.331E-03	2.220E-03	1.922E-03	1.079E-03	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	3.369E-09	1.005E-08	2.312E-08	6.607E-08	1.662E-07	3.073E-07	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		2.380E-03	2.363E-03	2.331E-03	2.220E-03	1.922E-03	1.079E-03	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	1.445E-08	4.221E-08	9.678E-08	2.787E-07	7.242E-07	1.517E-06	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	1.391E-14	9.403E-14	4.850E-13	4.137E-12	3.086E-11	2.054E-10	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		1.445E-08	4.221E-08	9.678E-08	2.787E-07	7.242E-07	1.517E-06	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM - AF 100 m²

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.327E-09	9.289E-09	4.885E-08	4.272E-07	3.360E-06	2.699E-05	0.000E+00	0.000E+00
Ra-226	U-238	9.999E-01	9.386E-16	1.408E-14	1.634E-13	4.224E-12	9.551E-11	2.448E-09	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)		1.327E-09	9.289E-09	4.885E-08	4.272E-07	3.360E-06	2.699E-05	0.000E+00	0.000E+00
Pb-210	U-234	1.000E+00	5.615E-13	5.884E-12	5.213E-11	1.058E-09	1.882E-08	2.769E-07	0.000E+00	0.000E+00
Pb-210	U-238	9.999E-01	3.568E-19	7.672E-18	1.427E-16	8.258E-15	4.254E-13	2.131E-11	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		5.615E-13	5.884E-12	5.213E-11	1.059E-09	1.882E-08	2.769E-07	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	1.127E-07	1.119E-07	1.103E-07	1.050E-07	9.077E-08	5.046E-08	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	3.040E-02	3.026E-02	2.998E-02	2.900E-02	2.631E-02	1.784E-02	0.000E+00	0.000E+00
U-238	ΣDOSE(j)		3.040E-02	3.026E-02	2.998E-02	2.900E-02	2.631E-02	1.784E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM - AF 100 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Summary : Hematite - Surface CSM - AF 100 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.61 seconds

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Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Surface CSM - AF 1,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Surface CSM - AF 1,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Surface CSM - AF 1,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Surface CSM - AF 1,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Surface CSM - AF 1,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Surface CSM - AF 1,000 m^2

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1000.00 square meters	Am-241	1.000E+00
Thickness:	0.15 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.988E+00	1.943E+00	1.856E+00	1.589E+00	1.067E+00	4.146E-01	0.000E+00	0.000E+00
M(t):	7.952E-02	7.771E-02	7.423E-02	6.357E-02	4.268E-02	1.658E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 1.988E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.013E-02	0.0051	2.569E-03	0.0013	0.000E+00	0.0000	4.025E-02	0.0202	2.667E-04	0.0001	3.818E-05	0.0000	5.153E-02	0.0259
Np-237	2.463E-01	0.1239	3.082E-03	0.0016	0.000E+00	0.0000	9.698E-01	0.4879	6.974E-03	0.0035	2.445E-04	0.0001	6.205E-02	0.0312
Pu-239	6.870E-05	0.0000	2.483E-03	0.0012	0.000E+00	0.0000	3.916E-02	0.0197	5.189E-04	0.0003	1.839E-05	0.0000	5.014E-02	0.0252
Pu-240	3.586E-05	0.0000	2.483E-03	0.0012	0.000E+00	0.0000	3.916E-02	0.0197	5.189E-04	0.0003	1.839E-05	0.0000	5.014E-02	0.0252
Tc-99	2.980E-05	0.0000	4.801E-08	0.0000	0.000E+00	0.0000	1.492E-01	0.0751	8.888E-06	0.0000	2.431E-04	0.0001	2.061E-05	0.0000
U-234	9.531E-05	0.0000	7.632E-04	0.0004	0.000E+00	0.0000	1.157E-02	0.0058	5.452E-04	0.0003	8.980E-04	0.0005	4.003E-03	0.0020
U-235	1.759E-01	0.0885	7.112E-04	0.0004	0.000E+00	0.0000	1.094E-02	0.0055	5.151E-04	0.0003	8.484E-04	0.0004	3.784E-03	0.0019
U-238	3.296E-02	0.0166	6.825E-04	0.0003	0.000E+00	0.0000	1.098E-02	0.0055	5.177E-04	0.0003	8.527E-04	0.0004	3.801E-03	0.0019
Total	4.655E-01	0.2342	1.277E-02	0.0064	0.000E+00	0.0000	1.271E+00	0.6394	9.865E-03	0.0050	3.162E-03	0.0016	2.255E-01	0.1134

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.048E-01	0.0527
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.288E+00	0.6482
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.239E-02	0.0465
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.235E-02	0.0465
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.495E-01	0.0752
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.787E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.927E-01	0.0969
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.980E-02	0.0251
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.988E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.011E-02	0.0052	2.554E-03	0.0013	0.000E+00	0.0000	4.002E-02	0.0206	2.651E-04	0.0001	3.797E-05	0.0000	5.123E-02	0.0264
Np-237	2.391E-01	0.1231	2.981E-03	0.0015	0.000E+00	0.0000	9.383E-01	0.4830	6.748E-03	0.0035	2.365E-04	0.0001	6.002E-02	0.0309
Pu-239	6.863E-05	0.0000	2.472E-03	0.0013	0.000E+00	0.0000	3.898E-02	0.0201	5.165E-04	0.0003	1.831E-05	0.0000	4.990E-02	0.0257
Pu-240	3.583E-05	0.0000	2.471E-03	0.0013	0.000E+00	0.0000	3.898E-02	0.0201	5.165E-04	0.0003	1.830E-05	0.0000	4.990E-02	0.0257
Tc-99	2.959E-05	0.0000	4.749E-08	0.0000	0.000E+00	0.0000	1.476E-01	0.0760	8.792E-06	0.0000	2.405E-04	0.0001	2.039E-05	0.0000
U-234	9.503E-05	0.0000	7.579E-04	0.0004	0.000E+00	0.0000	1.149E-02	0.0059	5.414E-04	0.0003	8.918E-04	0.0005	3.976E-03	0.0020
U-235	1.753E-01	0.0902	7.065E-04	0.0004	0.000E+00	0.0000	1.089E-02	0.0056	5.115E-04	0.0003	8.425E-04	0.0004	3.761E-03	0.0019
U-238	3.284E-02	0.0169	6.777E-04	0.0003	0.000E+00	0.0000	1.091E-02	0.0056	5.141E-04	0.0003	8.467E-04	0.0004	3.775E-03	0.0019
Total	4.575E-01	0.2355	1.262E-02	0.0065	0.000E+00	0.0000	1.237E+00	0.6368	9.622E-03	0.0050	3.133E-03	0.0016	2.226E-01	0.1146

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.042E-01	0.0536
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.247E+00	0.6421
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.196E-02	0.0473
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.192E-02	0.0473
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.479E-01	0.0761
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.775E-02	0.0091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.920E-01	0.0988
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.956E-02	0.0255
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.008E-02	0.0054	2.525E-03	0.0014	0.000E+00	0.0000	3.956E-02	0.0213	2.621E-04	0.0001	3.753E-05	0.0000	5.065E-02	0.0273
Np-237	2.252E-01	0.1214	2.790E-03	0.0015	0.000E+00	0.0000	8.780E-01	0.4731	6.314E-03	0.0034	2.213E-04	0.0001	5.616E-02	0.0303
Pu-239	6.848E-05	0.0000	2.449E-03	0.0013	0.000E+00	0.0000	3.862E-02	0.0208	5.117E-04	0.0003	1.814E-05	0.0000	4.944E-02	0.0266
Pu-240	3.578E-05	0.0000	2.448E-03	0.0013	0.000E+00	0.0000	3.861E-02	0.0208	5.116E-04	0.0003	1.813E-05	0.0000	4.943E-02	0.0266
Tc-99	2.917E-05	0.0000	4.646E-08	0.0000	0.000E+00	0.0000	1.444E-01	0.0778	8.602E-06	0.0000	2.353E-04	0.0001	1.995E-05	0.0000
U-234	9.449E-05	0.0001	7.473E-04	0.0004	0.000E+00	0.0000	1.133E-02	0.0061	5.339E-04	0.0003	8.793E-04	0.0005	3.920E-03	0.0021
U-235	1.741E-01	0.0938	6.970E-04	0.0004	0.000E+00	0.0000	1.079E-02	0.0058	5.044E-04	0.0003	8.307E-04	0.0004	3.715E-03	0.0020
U-238	3.258E-02	0.0176	6.682E-04	0.0004	0.000E+00	0.0000	1.076E-02	0.0058	5.069E-04	0.0003	8.349E-04	0.0004	3.722E-03	0.0020
Total	4.422E-01	0.2383	1.232E-02	0.0066	0.000E+00	0.0000	1.172E+00	0.6315	9.153E-03	0.0049	3.075E-03	0.0017	2.171E-01	0.1170

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.031E-01	0.0556
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.169E+00	0.6297
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.110E-02	0.0491
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.105E-02	0.0491
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.447E-01	0.0780
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.750E-02	0.0094
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.906E-01	0.1027
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.907E-02	0.0264
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.856E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.981E-03	0.0063	2.424E-03	0.0015	0.000E+00	0.0000	3.799E-02	0.0239	2.517E-04	0.0002	3.604E-05	0.0000	4.863E-02	0.0306
Np-237	1.827E-01	0.1150	2.210E-03	0.0014	0.000E+00	0.0000	6.955E-01	0.4376	5.002E-03	0.0031	1.753E-04	0.0001	4.449E-02	0.0280
Pu-239	6.794E-05	0.0000	2.369E-03	0.0015	0.000E+00	0.0000	3.735E-02	0.0235	4.950E-04	0.0003	1.754E-05	0.0000	4.782E-02	0.0301
Pu-240	3.559E-05	0.0000	2.367E-03	0.0015	0.000E+00	0.0000	3.732E-02	0.0235	4.946E-04	0.0003	1.753E-05	0.0000	4.778E-02	0.0301
Tc-99	2.776E-05	0.0000	4.300E-08	0.0000	0.000E+00	0.0000	1.337E-01	0.0841	7.962E-06	0.0000	2.178E-04	0.0001	1.846E-05	0.0000
U-234	9.291E-05	0.0001	7.112E-04	0.0004	0.000E+00	0.0000	1.078E-02	0.0068	5.080E-04	0.0003	8.367E-04	0.0005	3.730E-03	0.0023
U-235	1.698E-01	0.1069	6.653E-04	0.0004	0.000E+00	0.0000	1.043E-02	0.0066	4.799E-04	0.0003	7.905E-04	0.0005	3.562E-03	0.0022
U-238	3.169E-02	0.0199	6.358E-04	0.0004	0.000E+00	0.0000	1.023E-02	0.0064	4.823E-04	0.0003	7.944E-04	0.0005	3.542E-03	0.0022
Total	3.944E-01	0.2482	1.138E-02	0.0072	0.000E+00	0.0000	9.732E-01	0.6124	7.721E-03	0.0049	2.886E-03	0.0018	1.996E-01	0.1256

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.931E-02	0.0625
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.301E-01	0.5852
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.812E-02	0.0554
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.802E-02	0.0554
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.339E-01	0.0843
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.666E-02	0.0105
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.858E-01	0.1169
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.738E-02	0.0298
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.589E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.693E-03	0.0091	2.148E-03	0.0020	0.000E+00	0.0000	3.366E-02	0.0315	2.230E-04	0.0002	3.193E-05	0.0000	4.309E-02	0.0404
Np-237	1.003E-01	0.0940	1.130E-03	0.0011	0.000E+00	0.0000	3.557E-01	0.3333	2.558E-03	0.0024	8.972E-05	0.0001	2.275E-02	0.0213
Pu-239	6.632E-05	0.0001	2.143E-03	0.0020	0.000E+00	0.0000	3.380E-02	0.0317	4.479E-04	0.0004	1.587E-05	0.0000	4.327E-02	0.0406
Pu-240	3.506E-05	0.0000	2.138E-03	0.0020	0.000E+00	0.0000	3.372E-02	0.0316	4.468E-04	0.0004	1.584E-05	0.0000	4.317E-02	0.0405
Tc-99	2.408E-05	0.0000	3.431E-08	0.0000	0.000E+00	0.0000	1.067E-01	0.1000	6.353E-06	0.0000	1.738E-04	0.0002	1.473E-05	0.0000
U-234	9.071E-05	0.0001	6.142E-04	0.0006	0.000E+00	0.0000	9.307E-03	0.0087	4.385E-04	0.0004	7.223E-04	0.0007	3.222E-03	0.0030
U-235	1.581E-01	0.1482	5.836E-04	0.0005	0.000E+00	0.0000	9.455E-03	0.0089	4.144E-04	0.0004	6.826E-04	0.0006	3.164E-03	0.0030
U-238	2.920E-02	0.0274	5.490E-04	0.0005	0.000E+00	0.0000	8.836E-03	0.0083	4.164E-04	0.0004	6.859E-04	0.0006	3.058E-03	0.0029
Total	2.975E-01	0.2788	9.306E-03	0.0087	0.000E+00	0.0000	5.911E-01	0.5540	4.951E-03	0.0046	2.418E-03	0.0023	1.617E-01	0.1516

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.885E-02	0.0833
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.825E-01	0.4522
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.974E-02	0.0747
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.952E-02	0.0745
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.069E-01	0.1002
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.439E-02	0.0135
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.724E-01	0.1616
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.274E-02	0.0401
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.067E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.701E-03	0.0210	1.300E-03	0.0031	0.000E+00	0.0000	2.037E-02	0.0491	1.350E-04	0.0003	1.932E-05	0.0000	2.607E-02	0.0629
Np-237	1.175E-02	0.0284	9.994E-05	0.0002	0.000E+00	0.0000	3.144E-02	0.0758	2.261E-04	0.0005	7.987E-06	0.0000	2.011E-03	0.0049
Pu-239	5.891E-05	0.0001	1.395E-03	0.0034	0.000E+00	0.0000	2.201E-02	0.0531	2.917E-04	0.0007	1.034E-05	0.0000	2.817E-02	0.0680
Pu-240	3.308E-05	0.0001	1.385E-03	0.0033	0.000E+00	0.0000	2.184E-02	0.0527	2.894E-04	0.0007	1.026E-05	0.0000	2.796E-02	0.0674
Tc-99	1.439E-05	0.0000	1.439E-08	0.0000	0.000E+00	0.0000	4.473E-02	0.1079	2.665E-06	0.0000	7.289E-05	0.0002	6.177E-06	0.0000
U-234	1.015E-04	0.0002	3.400E-04	0.0008	0.000E+00	0.0000	5.157E-03	0.0124	2.424E-04	0.0006	3.992E-04	0.0010	1.783E-03	0.0043
U-235	1.185E-01	0.2858	3.538E-04	0.0009	0.000E+00	0.0000	6.246E-03	0.0151	2.294E-04	0.0006	3.775E-04	0.0009	2.003E-03	0.0048
U-238	2.094E-02	0.0505	3.034E-04	0.0007	0.000E+00	0.0000	4.884E-03	0.0118	2.302E-04	0.0006	3.791E-04	0.0009	1.690E-03	0.0041
Total	1.601E-01	0.3862	5.177E-03	0.0125	0.000E+00	0.0000	1.567E-01	0.3779	1.647E-03	0.0040	1.277E-03	0.0031	8.970E-02	0.2164

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.660E-02	0.1365
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.554E-02	0.1098
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.194E-02	0.1253
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-02	0.1243
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.482E-02	0.1081
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.023E-03	0.0194
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.277E-01	0.3081
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.842E-02	0.0686
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.146E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.048E-01	1.042E-01	1.031E-01	9.931E-02	8.884E-02	5.659E-02	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	2.003E-07	6.080E-07	1.380E-06	3.657E-06	7.452E-06	7.953E-06	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	5.434E-15	3.334E-14	1.613E-13	1.257E-12	7.799E-12	3.075E-11	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	2.718E-18	3.938E-17	4.459E-16	1.098E-14	2.208E-13	4.118E-12	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		1.048E-01	1.042E-01	1.031E-01	9.931E-02	8.885E-02	5.660E-02	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	1.288E+00	1.247E+00	1.169E+00	9.301E-01	4.825E-01	4.553E-02	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	4.676E-08	1.251E-07	2.713E-07	6.969E-07	1.371E-06	1.285E-06	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	3.308E-11	2.248E-10	1.152E-09	9.439E-09	6.295E-08	3.220E-07	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		1.288E+00	1.247E+00	1.169E+00	9.301E-01	4.825E-01	4.554E-02	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	9.239E-02	9.196E-02	9.110E-02	8.812E-02	7.974E-02	5.194E-02	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	9.464E-11	2.837E-10	6.590E-10	1.941E-09	5.339E-09	1.399E-08	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	4.529E-15	3.248E-14	1.720E-13	1.491E-12	1.127E-11	7.680E-11	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	2.864E-17	3.891E-16	4.226E-15	1.006E-13	1.957E-12	3.374E-11	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		9.239E-02	9.196E-02	9.110E-02	8.812E-02	7.974E-02	5.194E-02	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	4.571E-09	4.550E-09	4.507E-09	4.357E-09	3.936E-09	2.550E-09	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	9.235E-02	9.192E-02	9.105E-02	8.802E-02	7.952E-02	5.151E-02	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	2.428E-10	7.397E-10	1.717E-09	4.959E-09	1.274E-08	2.521E-08	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	2.114E-20	1.396E-19	7.123E-19	6.055E-18	4.545E-17	3.085E-16	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	1.660E-20	2.497E-19	2.781E-18	6.028E-17	8.937E-16	9.780E-15	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	1.047E-21	2.925E-20	6.128E-19	2.739E-17	6.176E-16	8.531E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		9.235E-02	9.192E-02	9.105E-02	8.802E-02	7.952E-02	5.151E-02	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.495E-01	1.479E-01	1.447E-01	1.339E-01	1.069E-01	4.482E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.787E-02	1.775E-02	1.750E-02	1.666E-02	1.439E-02	7.968E-03	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	7.702E-08	2.206E-07	5.023E-07	1.439E-06	3.717E-06	7.590E-06	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	2.151E-09	1.527E-08	8.077E-08	7.082E-07	5.564E-06	4.446E-05	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	5.555E-12	5.795E-11	5.111E-10	1.033E-08	1.831E-07	2.667E-06	0.000E+00	0.000E+00
U-234	ΣDSR (j)		1.787E-02	1.775E-02	1.750E-02	1.666E-02	1.439E-02	8.023E-03	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	1.927E-01	1.920E-01	1.905E-01	1.855E-01	1.715E-01	1.254E-01	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	1.406E-05	4.282E-05	9.946E-05	2.876E-04	7.426E-04	1.499E-03	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	1.118E-07	7.147E-07	3.542E-06	2.816E-05	1.801E-04	8.266E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		1.927E-01	1.920E-01	1.906E-01	1.858E-01	1.724E-01	1.277E-01	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	8.661E-07	8.601E-07	8.481E-07	8.070E-07	6.968E-07	3.854E-07	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	4.980E-02	4.956E-02	4.907E-02	4.737E-02	4.274E-02	2.842E-02	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	2.530E-08	7.544E-08	1.736E-07	4.957E-07	1.244E-06	2.270E-06	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	7.541E-14	4.965E-13	2.529E-12	2.140E-11	1.585E-10	1.028E-09	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	1.510E-15	2.304E-14	2.695E-13	6.997E-12	1.581E-10	4.033E-09	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	3.534E-18	7.567E-17	1.401E-15	8.067E-14	4.139E-12	2.052E-10	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		4.980E-02	4.956E-02	4.907E-02	4.737E-02	4.274E-02	2.842E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	2.386E+02	2.399E+02	2.424E+02	2.517E+02	2.814E+02	4.417E+02	*3.431E+12	*3.431E+12
Np-237	1.940E+01	2.004E+01	2.139E+01	2.688E+01	5.182E+01	5.490E+02	*7.047E+08	*7.047E+08
Pu-239	2.706E+02	2.719E+02	2.744E+02	2.837E+02	3.135E+02	4.813E+02	*6.214E+10	*6.214E+10
Pu-240	2.707E+02	2.720E+02	2.746E+02	2.840E+02	3.144E+02	4.853E+02	*2.278E+11	*2.278E+11
Tc-99	1.672E+02	1.690E+02	1.728E+02	1.866E+02	2.339E+02	5.578E+02	*1.697E+10	*1.697E+10
U-234	1.399E+03	1.408E+03	1.428E+03	1.501E+03	1.737E+03	3.116E+03	*6.247E+09	*6.247E+09
U-235	1.297E+02	1.302E+02	1.312E+02	1.346E+02	1.450E+02	1.958E+02	*2.161E+06	*2.161E+06
U-238	5.020E+02	5.045E+02	5.095E+02	5.277E+02	5.849E+02	8.795E+02	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	1.048E-01	2.386E+02	1.048E-01	2.386E+02
Np-237	1.000E+00	0.000E+00	1.288E+00	1.940E+01	1.288E+00	1.940E+01
Pu-239	1.000E+00	0.000E+00	9.239E-02	2.706E+02	9.239E-02	2.706E+02
Pu-240	1.000E+00	0.000E+00	9.235E-02	2.707E+02	9.235E-02	2.707E+02
Tc-99	1.000E+00	0.000E+00	1.495E-01	1.672E+02	1.495E-01	1.672E+02
U-234	1.000E+00	0.000E+00	1.787E-02	1.399E+03	1.787E-02	1.399E+03
U-235	1.000E+00	0.000E+00	1.927E-01	1.297E+02	1.927E-01	1.297E+02
U-238	1.000E+00	0.000E+00	4.980E-02	5.020E+02	4.980E-02	5.020E+02

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.048E-01	1.042E-01	1.031E-01	9.931E-02	8.884E-02	5.659E-02	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	2.003E-07	6.080E-07	1.380E-06	3.657E-06	7.452E-06	7.953E-06	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	1.288E+00	1.247E+00	1.169E+00	9.301E-01	4.825E-01	4.553E-02	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		1.288E+00	1.247E+00	1.169E+00	9.301E-01	4.825E-01	4.554E-02	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	5.434E-15	3.334E-14	1.613E-13	1.257E-12	7.799E-12	3.075E-11	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	4.676E-08	1.251E-07	2.713E-07	6.969E-07	1.371E-06	1.285E-06	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		4.676E-08	1.251E-07	2.713E-07	6.969E-07	1.371E-06	1.285E-06	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	2.718E-18	3.938E-17	4.459E-16	1.098E-14	2.208E-13	4.118E-12	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	3.308E-11	2.248E-10	1.152E-09	9.439E-09	6.295E-08	3.220E-07	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		3.308E-11	2.248E-10	1.152E-09	9.439E-09	6.295E-08	3.220E-07	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	9.239E-02	9.196E-02	9.110E-02	8.812E-02	7.974E-02	5.194E-02	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	9.464E-11	2.837E-10	6.590E-10	1.941E-09	5.339E-09	1.399E-08	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	1.927E-01	1.920E-01	1.905E-01	1.855E-01	1.715E-01	1.254E-01	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		1.927E-01	1.920E-01	1.905E-01	1.855E-01	1.715E-01	1.254E-01	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	4.529E-15	3.248E-14	1.720E-13	1.491E-12	1.127E-11	7.680E-11	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	1.406E-05	4.282E-05	9.946E-05	2.876E-04	7.426E-04	1.499E-03	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		1.406E-05	4.282E-05	9.946E-05	2.876E-04	7.426E-04	1.499E-03	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	2.864E-17	3.891E-16	4.226E-15	1.006E-13	1.957E-12	3.374E-11	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	1.118E-07	7.147E-07	3.542E-06	2.816E-05	1.801E-04	8.266E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		1.118E-07	7.147E-07	3.542E-06	2.816E-05	1.801E-04	8.266E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	4.571E-09	4.550E-09	4.507E-09	4.357E-09	3.936E-09	2.550E-09	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	9.235E-02	9.192E-02	9.105E-02	8.802E-02	7.952E-02	5.151E-02	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		9.235E-02	9.192E-02	9.105E-02	8.802E-02	7.952E-02	5.151E-02	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	2.428E-10	7.397E-10	1.717E-09	4.959E-09	1.274E-08	2.521E-08	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	2.114E-20	1.396E-19	7.123E-19	6.055E-18	4.545E-17	3.085E-16	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	1.660E-20	2.497E-19	2.781E-18	6.028E-17	8.937E-16	9.780E-15	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	1.047E-21	2.925E-20	6.128E-19	2.739E-17	6.176E-16	8.531E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.495E-01	1.479E-01	1.447E-01	1.339E-01	1.069E-01	4.482E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.787E-02	1.775E-02	1.750E-02	1.666E-02	1.439E-02	7.968E-03	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	2.530E-08	7.544E-08	1.736E-07	4.957E-07	1.244E-06	2.270E-06	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		1.787E-02	1.775E-02	1.750E-02	1.666E-02	1.439E-02	7.970E-03	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	7.702E-08	2.206E-07	5.023E-07	1.439E-06	3.717E-06	7.590E-06	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	7.541E-14	4.965E-13	2.529E-12	2.140E-11	1.585E-10	1.028E-09	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		7.702E-08	2.206E-07	5.023E-07	1.439E-06	3.717E-06	7.591E-06	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	2.151E-09	1.527E-08	8.077E-08	7.082E-07	5.564E-06	4.446E-05	0.000E+00	0.000E+00
Ra-226	U-238	9.999E-01	1.510E-15	2.304E-14	2.695E-13	6.997E-12	1.581E-10	4.033E-09	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)		2.151E-09	1.527E-08	8.077E-08	7.082E-07	5.564E-06	4.446E-05	0.000E+00	0.000E+00
Pb-210	U-234	1.000E+00	5.555E-12	5.795E-11	5.111E-10	1.033E-08	1.831E-07	2.667E-06	0.000E+00	0.000E+00
Pb-210	U-238	9.999E-01	3.534E-18	7.567E-17	1.401E-15	8.067E-14	4.139E-12	2.052E-10	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		5.555E-12	5.795E-11	5.111E-10	1.033E-08	1.831E-07	2.667E-06	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	8.661E-07	8.601E-07	8.481E-07	8.070E-07	6.968E-07	3.854E-07	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	4.980E-02	4.956E-02	4.907E-02	4.737E-02	4.274E-02	2.842E-02	0.000E+00	0.000E+00
U-238	ΣDOSE(j)		4.980E-02	4.956E-02	4.907E-02	4.738E-02	4.274E-02	2.842E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Summary : Hematite - Surface CSM - AF 1,000 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.50 seconds

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Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Surface CSM - AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Surface CSM - AF 10,000 m²

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Attachment 4 to HEM-11-91

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Surface CSM - AF 10,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Surface CSM - AF 10,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g	
Area: 10000.00 square meters	Am-241	1.000E+00
Thickness: 0.15 meters	Np-237	1.000E+00
Cover Depth: 0.00 meters	Pu-239	1.000E+00
	Pu-240	1.000E+00
	Tc-99	1.000E+00
	U-234	1.000E+00
	U-235	1.000E+00
	U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.124E+00	2.076E+00	1.984E+00	1.701E+00	1.147E+00	4.498E-01	0.000E+00	0.000E+00
M(t):	8.495E-02	8.303E-02	7.935E-02	6.805E-02	4.587E-02	1.799E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 2.124E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.068E-02	0.0050	3.290E-03	0.0015	0.000E+00	0.0000	4.025E-02	0.0190	2.667E-03	0.0013	3.818E-04	0.0002	5.153E-02	0.0243
Np-237	2.545E-01	0.1198	3.947E-03	0.0019	0.000E+00	0.0000	9.698E-01	0.4567	6.974E-02	0.0328	2.445E-03	0.0012	6.205E-02	0.0292
Pu-239	7.078E-05	0.0000	3.180E-03	0.0015	0.000E+00	0.0000	3.917E-02	0.0184	5.189E-03	0.0024	1.839E-04	0.0001	5.014E-02	0.0236
Pu-240	3.651E-05	0.0000	3.180E-03	0.0015	0.000E+00	0.0000	3.916E-02	0.0184	5.189E-03	0.0024	1.839E-04	0.0001	5.014E-02	0.0236
Tc-99	3.058E-05	0.0000	6.149E-08	0.0000	0.000E+00	0.0000	1.492E-01	0.0703	8.888E-05	0.0000	2.431E-03	0.0011	2.061E-05	0.0000
U-234	9.813E-05	0.0000	9.774E-04	0.0005	0.000E+00	0.0000	1.157E-02	0.0054	5.452E-03	0.0026	8.980E-03	0.0042	4.003E-03	0.0019
U-235	1.808E-01	0.0851	9.109E-04	0.0004	0.000E+00	0.0000	1.094E-02	0.0052	5.151E-03	0.0024	8.484E-03	0.0040	3.784E-03	0.0018
U-238	3.431E-02	0.0162	8.740E-04	0.0004	0.000E+00	0.0000	1.098E-02	0.0052	5.177E-03	0.0024	8.527E-03	0.0040	3.801E-03	0.0018
Total	4.804E-01	0.2262	1.636E-02	0.0077	0.000E+00	0.0000	1.271E+00	0.5986	9.866E-02	0.0465	3.162E-02	0.0149	2.255E-01	0.1062

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.088E-01	0.0512
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.362E+00	0.6416
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.793E-02	0.0461
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.789E-02	0.0461
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.518E-01	0.0715
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.108E-02	0.0146
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.100E-01	0.0989
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.367E-02	0.0300
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.124E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.066E-02	0.0051	3.271E-03	0.0016	0.000E+00	0.0000	4.002E-02	0.0193	2.651E-03	0.0013	3.797E-04	0.0002	5.123E-02	0.0247
Np-237	2.470E-01	0.1190	3.818E-03	0.0018	0.000E+00	0.0000	9.383E-01	0.4520	6.748E-02	0.0325	2.365E-03	0.0011	6.002E-02	0.0289
Pu-239	7.071E-05	0.0000	3.166E-03	0.0015	0.000E+00	0.0000	3.898E-02	0.0188	5.165E-03	0.0025	1.831E-04	0.0001	4.990E-02	0.0240
Pu-240	3.648E-05	0.0000	3.165E-03	0.0015	0.000E+00	0.0000	3.898E-02	0.0188	5.165E-03	0.0025	1.830E-04	0.0001	4.990E-02	0.0240
Tc-99	3.037E-05	0.0000	6.082E-08	0.0000	0.000E+00	0.0000	1.476E-01	0.0711	8.792E-05	0.0000	2.405E-03	0.0012	2.039E-05	0.0000
U-234	9.784E-05	0.0000	9.706E-04	0.0005	0.000E+00	0.0000	1.149E-02	0.0055	5.414E-03	0.0026	8.918E-03	0.0043	3.976E-03	0.0019
U-235	1.802E-01	0.0868	9.048E-04	0.0004	0.000E+00	0.0000	1.089E-02	0.0052	5.115E-03	0.0025	8.425E-03	0.0041	3.761E-03	0.0018
U-238	3.418E-02	0.0165	8.679E-04	0.0004	0.000E+00	0.0000	1.091E-02	0.0053	5.141E-03	0.0025	8.467E-03	0.0041	3.775E-03	0.0018
Total	4.723E-01	0.2275	1.616E-02	0.0078	0.000E+00	0.0000	1.237E+00	0.5960	9.622E-02	0.0464	3.133E-02	0.0151	2.226E-01	0.1072

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.082E-01	0.0521
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.319E+00	0.6354
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.747E-02	0.0470
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.743E-02	0.0469
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.502E-01	0.0723
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.086E-02	0.0149
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.092E-01	0.1008
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.334E-02	0.0305
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.076E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.063E-02	0.0054	3.234E-03	0.0016	0.000E+00	0.0000	3.957E-02	0.0199	2.621E-03	0.0013	3.753E-04	0.0002	5.065E-02	0.0255
Np-237	2.328E-01	0.1173	3.573E-03	0.0018	0.000E+00	0.0000	8.780E-01	0.4426	6.314E-02	0.0318	2.213E-03	0.0011	5.616E-02	0.0283
Pu-239	7.057E-05	0.0000	3.136E-03	0.0016	0.000E+00	0.0000	3.862E-02	0.0195	5.117E-03	0.0026	1.814E-04	0.0001	4.944E-02	0.0249
Pu-240	3.643E-05	0.0000	3.135E-03	0.0016	0.000E+00	0.0000	3.861E-02	0.0195	5.116E-03	0.0026	1.813E-04	0.0001	4.943E-02	0.0249
Tc-99	2.995E-05	0.0000	5.950E-08	0.0000	0.000E+00	0.0000	1.444E-01	0.0728	8.602E-05	0.0000	2.353E-03	0.0012	1.995E-05	0.0000
U-234	9.730E-05	0.0000	9.571E-04	0.0005	0.000E+00	0.0000	1.133E-02	0.0057	5.339E-03	0.0027	8.793E-03	0.0044	3.920E-03	0.0020
U-235	1.790E-01	0.0902	8.927E-04	0.0005	0.000E+00	0.0000	1.079E-02	0.0054	5.044E-03	0.0025	8.307E-03	0.0042	3.715E-03	0.0019
U-238	3.392E-02	0.0171	8.558E-04	0.0004	0.000E+00	0.0000	1.076E-02	0.0054	5.069E-03	0.0026	8.349E-03	0.0042	3.722E-03	0.0019
Total	4.565E-01	0.2301	1.578E-02	0.0080	0.000E+00	0.0000	1.172E+00	0.5908	9.153E-02	0.0461	3.075E-02	0.0155	2.171E-01	0.1094

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.071E-01	0.0540
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.236E+00	0.6230
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.656E-02	0.0487
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.650E-02	0.0486
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.469E-01	0.0741
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.043E-02	0.0153
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.077E-01	0.1047
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.267E-02	0.0316
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.984E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.051E-02	0.0062	3.105E-03	0.0018	0.000E+00	0.0000	3.799E-02	0.0223	2.517E-03	0.0015	3.604E-04	0.0002	4.863E-02	0.0286
Np-237	1.891E-01	0.1111	2.830E-03	0.0017	0.000E+00	0.0000	6.955E-01	0.4088	5.002E-02	0.0294	1.753E-03	0.0010	4.449E-02	0.0262
Pu-239	7.008E-05	0.0000	3.033E-03	0.0018	0.000E+00	0.0000	3.736E-02	0.0220	4.950E-03	0.0029	1.754E-04	0.0001	4.782E-02	0.0281
Pu-240	3.625E-05	0.0000	3.031E-03	0.0018	0.000E+00	0.0000	3.733E-02	0.0219	4.946E-03	0.0029	1.753E-04	0.0001	4.778E-02	0.0281
Tc-99	2.853E-05	0.0000	5.507E-08	0.0000	0.000E+00	0.0000	1.337E-01	0.0786	7.962E-05	0.0000	2.178E-03	0.0013	1.846E-05	0.0000
U-234	9.573E-05	0.0001	9.108E-04	0.0005	0.000E+00	0.0000	1.078E-02	0.0063	5.080E-03	0.0030	8.367E-03	0.0049	3.730E-03	0.0022
U-235	1.748E-01	0.1028	8.521E-04	0.0005	0.000E+00	0.0000	1.043E-02	0.0061	4.799E-03	0.0028	7.905E-03	0.0046	3.562E-03	0.0021
U-238	3.303E-02	0.0194	8.143E-04	0.0005	0.000E+00	0.0000	1.023E-02	0.0060	4.823E-03	0.0028	7.944E-03	0.0047	3.542E-03	0.0021
Total	4.077E-01	0.2396	1.458E-02	0.0086	0.000E+00	0.0000	9.733E-01	0.5721	7.721E-02	0.0454	2.886E-02	0.0170	1.996E-01	0.1173

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.031E-01	0.0606
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.836E-01	0.5782
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.340E-02	0.0549
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.329E-02	0.0548
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.360E-01	0.0799
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.896E-02	0.0170
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.024E-01	0.1190
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.039E-02	0.0355
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.701E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.018E-02	0.0089	2.751E-03	0.0024	0.000E+00	0.0000	3.366E-02	0.0294	2.230E-03	0.0019	3.193E-04	0.0003	4.309E-02	0.0376
Np-237	1.041E-01	0.0908	1.447E-03	0.0013	0.000E+00	0.0000	3.557E-01	0.3101	2.558E-02	0.0223	8.972E-04	0.0008	2.275E-02	0.0198
Pu-239	6.859E-05	0.0001	2.745E-03	0.0024	0.000E+00	0.0000	3.380E-02	0.0295	4.479E-03	0.0039	1.587E-04	0.0001	4.327E-02	0.0377
Pu-240	3.572E-05	0.0000	2.738E-03	0.0024	0.000E+00	0.0000	3.372E-02	0.0294	4.468E-03	0.0039	1.584E-04	0.0001	4.317E-02	0.0376
Tc-99	2.482E-05	0.0000	4.394E-08	0.0000	0.000E+00	0.0000	1.067E-01	0.0930	6.353E-05	0.0001	1.738E-03	0.0015	1.473E-05	0.0000
U-234	9.364E-05	0.0001	7.867E-04	0.0007	0.000E+00	0.0000	9.308E-03	0.0081	4.385E-03	0.0038	7.223E-03	0.0063	3.222E-03	0.0028
U-235	1.633E-01	0.1424	7.474E-04	0.0007	0.000E+00	0.0000	9.455E-03	0.0082	4.144E-03	0.0036	6.826E-03	0.0060	3.164E-03	0.0028
U-238	3.053E-02	0.0266	7.031E-04	0.0006	0.000E+00	0.0000	8.836E-03	0.0077	4.164E-03	0.0036	6.859E-03	0.0060	3.058E-03	0.0027
Total	3.083E-01	0.2688	1.192E-02	0.0104	0.000E+00	0.0000	5.911E-01	0.5155	4.951E-02	0.0432	2.418E-02	0.0211	1.617E-01	0.1410

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.223E-02	0.0804
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.104E-01	0.4451
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.452E-02	0.0737
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.429E-02	0.0735
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.085E-01	0.0946
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.502E-02	0.0218
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.876E-01	0.1636
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.415E-02	0.0472
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.147E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.045E-03	0.0201	1.665E-03	0.0037	0.000E+00	0.0000	2.037E-02	0.0453	1.350E-03	0.0030	1.932E-04	0.0004	2.607E-02	0.0580
Np-237	1.234E-02	0.0274	1.280E-04	0.0003	0.000E+00	0.0000	3.144E-02	0.0699	2.261E-03	0.0050	7.987E-05	0.0002	2.011E-03	0.0045
Pu-239	6.148E-05	0.0001	1.787E-03	0.0040	0.000E+00	0.0000	2.201E-02	0.0489	2.917E-03	0.0065	1.034E-04	0.0002	2.817E-02	0.0626
Pu-240	3.375E-05	0.0001	1.773E-03	0.0039	0.000E+00	0.0000	2.184E-02	0.0486	2.894E-03	0.0064	1.026E-04	0.0002	2.796E-02	0.0622
Tc-99	1.498E-05	0.0000	1.843E-08	0.0000	0.000E+00	0.0000	4.473E-02	0.0994	2.665E-05	0.0001	7.289E-04	0.0016	6.177E-06	0.0000
U-234	1.060E-04	0.0002	4.354E-04	0.0010	0.000E+00	0.0000	5.157E-03	0.0115	2.424E-03	0.0054	3.992E-03	0.0089	1.783E-03	0.0040
U-235	1.239E-01	0.2754	4.532E-04	0.0010	0.000E+00	0.0000	6.246E-03	0.0139	2.294E-03	0.0051	3.775E-03	0.0084	2.003E-03	0.0045
U-238	2.212E-02	0.0492	3.886E-04	0.0009	0.000E+00	0.0000	4.884E-03	0.0109	2.302E-03	0.0051	3.791E-03	0.0084	1.690E-03	0.0038
Total	1.676E-01	0.3726	6.630E-03	0.0147	0.000E+00	0.0000	1.567E-01	0.3483	1.647E-02	0.0366	1.277E-02	0.0284	8.970E-02	0.1994

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.870E-02	0.1305
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.825E-02	0.1073
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.505E-02	0.1224
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.460E-02	0.1214
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.550E-02	0.1012
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.390E-02	0.0309
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.386E-01	0.3082
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.518E-02	0.0782
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.498E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.088E-01	1.082E-01	1.071E-01	1.031E-01	9.222E-02	5.869E-02	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	2.111E-07	6.423E-07	1.459E-06	3.866E-06	7.884E-06	8.427E-06	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	8.586E-15	5.520E-14	2.735E-13	2.160E-12	1.345E-11	5.300E-11	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	2.920E-18	4.179E-17	4.699E-16	1.153E-14	2.321E-13	4.357E-12	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		1.088E-01	1.082E-01	1.071E-01	1.031E-01	9.223E-02	5.870E-02	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	1.362E+00	1.319E+00	1.236E+00	9.836E-01	5.104E-01	4.825E-02	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	7.609E-08	2.113E-07	4.645E-07	1.202E-06	2.368E-06	2.215E-06	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	3.536E-11	2.376E-10	1.212E-09	9.907E-09	6.614E-08	3.407E-07	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		1.362E+00	1.319E+00	1.236E+00	9.836E-01	5.104E-01	4.825E-02	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	9.793E-02	9.747E-02	9.656E-02	9.340E-02	8.452E-02	5.505E-02	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	1.029E-10	3.090E-10	7.180E-10	2.115E-09	5.813E-09	1.521E-08	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	4.655E-15	3.297E-14	1.736E-13	1.501E-12	1.133E-11	7.729E-11	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	2.960E-17	4.023E-16	4.374E-15	1.043E-13	2.033E-12	3.530E-11	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		9.793E-02	9.747E-02	9.656E-02	9.340E-02	8.452E-02	5.505E-02	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	4.846E-09	4.823E-09	4.777E-09	4.618E-09	4.172E-09	2.703E-09	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	9.789E-02	9.743E-02	9.650E-02	9.329E-02	8.429E-02	5.460E-02	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	4.211E-10	1.286E-09	2.988E-09	8.629E-09	2.217E-08	4.385E-08	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	2.454E-20	1.568E-19	7.861E-19	6.617E-18	4.951E-17	3.355E-16	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	1.766E-20	2.660E-19	2.964E-18	6.429E-17	9.546E-16	1.050E-14	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	1.093E-21	3.057E-20	6.408E-19	2.868E-17	6.495E-16	9.108E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		9.789E-02	9.743E-02	9.650E-02	9.329E-02	8.429E-02	5.460E-02	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.518E-01	1.502E-01	1.469E-01	1.360E-01	1.085E-01	4.550E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	3.108E-02	3.086E-02	3.043E-02	2.896E-02	2.501E-02	1.384E-02	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	8.757E-08	2.439E-07	5.497E-07	1.567E-06	4.041E-06	8.243E-06	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	2.274E-09	1.616E-08	8.551E-08	7.505E-07	5.910E-06	4.763E-05	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	6.586E-12	7.257E-11	6.715E-10	1.413E-08	2.545E-07	3.730E-06	0.000E+00	0.000E+00
U-234	ΣDSR (j)		3.108E-02	3.086E-02	3.043E-02	2.896E-02	2.502E-02	1.390E-02	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	2.100E-01	2.092E-01	2.076E-01	2.021E-01	1.867E-01	1.363E-01	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	1.435E-05	4.327E-05	1.002E-04	2.893E-04	7.467E-04	1.509E-03	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	1.155E-07	7.392E-07	3.668E-06	2.920E-05	1.872E-04	8.649E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		2.100E-01	2.092E-01	2.077E-01	2.024E-01	1.876E-01	1.386E-01	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	1.509E-06	1.498E-06	1.477E-06	1.405E-06	1.214E-06	6.709E-07	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	6.367E-02	6.333E-02	6.267E-02	6.038E-02	5.414E-02	3.517E-02	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	4.400E-08	1.312E-07	3.019E-07	8.620E-07	2.162E-06	3.943E-06	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	8.766E-14	5.570E-13	2.789E-12	2.336E-11	1.724E-10	1.117E-09	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	1.596E-15	2.437E-14	2.853E-13	7.414E-12	1.679E-10	4.320E-09	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	4.125E-18	9.307E-17	1.813E-15	1.094E-13	5.736E-12	2.868E-10	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		6.367E-02	6.333E-02	6.267E-02	6.038E-02	5.415E-02	3.518E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		2.298E+02	2.310E+02	2.335E+02	2.424E+02	2.711E+02	4.259E+02	*3.431E+12	*3.431E+12
Np-237		1.835E+01	1.895E+01	2.023E+01	2.542E+01	4.898E+01	5.181E+02	*7.047E+08	*7.047E+08
Pu-239		2.553E+02	2.565E+02	2.589E+02	2.677E+02	2.958E+02	4.541E+02	*6.214E+10	*6.214E+10
Pu-240		2.554E+02	2.566E+02	2.591E+02	2.680E+02	2.966E+02	4.579E+02	*2.278E+11	*2.278E+11
Tc-99		1.647E+02	1.665E+02	1.702E+02	1.839E+02	2.304E+02	5.494E+02	*1.697E+10	*1.697E+10
U-234		8.044E+02	8.100E+02	8.214E+02	8.632E+02	9.993E+02	1.799E+03	*6.247E+09	*6.247E+09
U-235		1.190E+02	1.195E+02	1.204E+02	1.235E+02	1.333E+02	1.803E+02	*2.161E+06	*2.161E+06
U-238		3.927E+02	3.947E+02	3.989E+02	4.140E+02	4.617E+02	7.107E+02	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	1.088E-01	2.298E+02	1.088E-01	2.298E+02
Np-237	1.000E+00	0.000E+00	1.362E+00	1.835E+01	1.362E+00	1.835E+01
Pu-239	1.000E+00	0.000E+00	9.793E-02	2.553E+02	9.793E-02	2.553E+02
Pu-240	1.000E+00	0.000E+00	9.789E-02	2.554E+02	9.789E-02	2.554E+02
Tc-99	1.000E+00	0.000E+00	1.518E-01	1.647E+02	1.518E-01	1.647E+02
U-234	1.000E+00	0.000E+00	3.108E-02	8.044E+02	3.108E-02	8.044E+02
U-235	1.000E+00	0.000E+00	2.100E-01	1.190E+02	2.100E-01	1.190E+02
U-238	1.000E+00	0.000E+00	6.367E-02	3.927E+02	6.367E-02	3.927E+02

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.088E-01	1.082E-01	1.071E-01	1.031E-01	9.222E-02	5.869E-02	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	2.111E-07	6.423E-07	1.459E-06	3.866E-06	7.884E-06	8.427E-06	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	1.362E+00	1.319E+00	1.236E+00	9.836E-01	5.104E-01	4.825E-02	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		1.362E+00	1.319E+00	1.236E+00	9.836E-01	5.104E-01	4.826E-02	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	8.586E-15	5.520E-14	2.735E-13	2.160E-12	1.345E-11	5.300E-11	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	7.609E-08	2.113E-07	4.645E-07	1.202E-06	2.368E-06	2.215E-06	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		7.609E-08	2.113E-07	4.645E-07	1.202E-06	2.368E-06	2.215E-06	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	2.920E-18	4.179E-17	4.699E-16	1.153E-14	2.321E-13	4.357E-12	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	3.536E-11	2.376E-10	1.212E-09	9.907E-09	6.614E-08	3.407E-07	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		3.536E-11	2.376E-10	1.212E-09	9.907E-09	6.614E-08	3.407E-07	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	9.793E-02	9.747E-02	9.656E-02	9.340E-02	8.452E-02	5.505E-02	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	1.029E-10	3.090E-10	7.180E-10	2.115E-09	5.813E-09	1.521E-08	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	2.100E-01	2.092E-01	2.076E-01	2.021E-01	1.867E-01	1.363E-01	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		2.100E-01	2.092E-01	2.076E-01	2.021E-01	1.867E-01	1.363E-01	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	4.655E-15	3.297E-14	1.736E-13	1.501E-12	1.133E-11	7.729E-11	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	1.435E-05	4.327E-05	1.002E-04	2.893E-04	7.467E-04	1.509E-03	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		1.435E-05	4.327E-05	1.002E-04	2.893E-04	7.467E-04	1.509E-03	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	2.960E-17	4.023E-16	4.374E-15	1.043E-13	2.033E-12	3.530E-11	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	1.155E-07	7.392E-07	3.668E-06	2.920E-05	1.872E-04	8.649E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		1.155E-07	7.392E-07	3.668E-06	2.920E-05	1.872E-04	8.649E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	4.846E-09	4.823E-09	4.777E-09	4.618E-09	4.172E-09	2.703E-09	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	9.789E-02	9.743E-02	9.650E-02	9.329E-02	8.429E-02	5.460E-02	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		9.789E-02	9.743E-02	9.650E-02	9.329E-02	8.429E-02	5.460E-02	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	4.211E-10	1.286E-09	2.988E-09	8.629E-09	2.217E-08	4.385E-08	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	2.454E-20	1.568E-19	7.861E-19	6.617E-18	4.951E-17	3.355E-16	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	1.766E-20	2.660E-19	2.964E-18	6.429E-17	9.546E-16	1.050E-14	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	1.093E-21	3.057E-20	6.408E-19	2.868E-17	6.495E-16	9.108E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.518E-01	1.502E-01	1.469E-01	1.360E-01	1.085E-01	4.550E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	3.108E-02	3.086E-02	3.043E-02	2.896E-02	2.501E-02	1.384E-02	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	4.400E-08	1.312E-07	3.019E-07	8.620E-07	2.162E-06	3.943E-06	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		3.108E-02	3.086E-02	3.043E-02	2.896E-02	2.501E-02	1.384E-02	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	8.757E-08	2.439E-07	5.497E-07	1.567E-06	4.041E-06	8.243E-06	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	8.766E-14	5.570E-13	2.789E-12	2.336E-11	1.724E-10	1.117E-09	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		8.757E-08	2.439E-07	5.497E-07	1.567E-06	4.041E-06	8.244E-06	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	2.274E-09	1.616E-08	8.551E-08	7.505E-07	5.910E-06	4.763E-05	0.000E+00	0.000E+00
Ra-226	U-238	9.999E-01	1.596E-15	2.437E-14	2.853E-13	7.414E-12	1.679E-10	4.320E-09	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)		2.274E-09	1.616E-08	8.551E-08	7.505E-07	5.910E-06	4.763E-05	0.000E+00	0.000E+00
Pb-210	U-234	1.000E+00	6.586E-12	7.257E-11	6.715E-10	1.413E-08	2.545E-07	3.730E-06	0.000E+00	0.000E+00
Pb-210	U-238	9.999E-01	4.125E-18	9.307E-17	1.813E-15	1.094E-13	5.736E-12	2.868E-10	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		6.586E-12	7.257E-11	6.715E-10	1.413E-08	2.545E-07	3.731E-06	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	1.509E-06	1.498E-06	1.477E-06	1.405E-06	1.214E-06	6.709E-07	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	6.367E-02	6.333E-02	6.267E-02	6.038E-02	5.414E-02	3.517E-02	0.000E+00	0.000E+00
U-238	ΣDOSE(j)		6.367E-02	6.334E-02	6.267E-02	6.038E-02	5.414E-02	3.517E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Summary : Hematite - Surface CSM - AF 10,000 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.35 seconds

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Summary : Hematite - Surface CSM - AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Surface CSM - AF 3 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Am-241	1.000E+00
Thickness:	0.15 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.199E-01	1.177E-01	1.134E-01	1.002E-01	7.339E-02	3.485E-02	0.000E+00	0.000E+00
M(t):	4.795E-03	4.706E-03	4.536E-03	4.007E-03	2.936E-03	1.394E-03	0.000E+00	0.000E+00

Maximum TDOSE(t): 1.199E-01 mrem/yr at t = 0.000E+00 years

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.838E-03	0.0237	1.351E-03	0.0113	0.000E+00	0.0000	1.207E-04	0.0010	8.000E-07	0.0000	1.146E-07	0.0000	1.546E-04	0.0013
Np-237	5.673E-02	0.4733	1.620E-03	0.0135	0.000E+00	0.0000	2.909E-03	0.0243	2.092E-05	0.0002	7.335E-07	0.0000	1.861E-04	0.0016
Pu-239	1.674E-05	0.0001	1.306E-03	0.0109	0.000E+00	0.0000	1.175E-04	0.0010	1.557E-06	0.0000	5.517E-08	0.0000	1.504E-04	0.0013
Pu-240	1.089E-05	0.0001	1.306E-03	0.0109	0.000E+00	0.0000	1.175E-04	0.0010	1.557E-06	0.0000	5.517E-08	0.0000	1.504E-04	0.0013
Tc-99	7.415E-06	0.0001	2.524E-08	0.0000	0.000E+00	0.0000	4.477E-04	0.0037	2.666E-08	0.0000	7.294E-07	0.0000	6.184E-08	0.0000
U-234	2.529E-05	0.0002	4.013E-04	0.0033	0.000E+00	0.0000	3.470E-05	0.0003	1.636E-06	0.0000	2.694E-06	0.0000	1.201E-05	0.0001
U-235	4.172E-02	0.3480	3.740E-04	0.0031	0.000E+00	0.0000	3.282E-05	0.0003	1.545E-06	0.0000	2.545E-06	0.0000	1.135E-05	0.0001
U-238	7.281E-03	0.0607	3.588E-04	0.0030	0.000E+00	0.0000	3.295E-05	0.0003	1.553E-06	0.0000	2.558E-06	0.0000	1.140E-05	0.0001
Total	1.086E-01	0.9062	6.717E-03	0.0560	0.000E+00	0.0000	3.813E-03	0.0318	2.960E-05	0.0002	9.485E-06	0.0001	6.764E-04	0.0056

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.465E-03	0.0372
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.147E-02	0.5128
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.592E-03	0.0133
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.586E-03	0.0132
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.560E-04	0.0038
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.776E-04	0.0040
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.214E-02	0.3515
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.688E-03	0.0641
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.832E-03	0.0241	1.343E-03	0.0114	0.000E+00	0.0000	1.200E-04	0.0010	7.954E-07	0.0000	1.139E-07	0.0000	1.537E-04	0.0013
Np-237	5.497E-02	0.4673	1.568E-03	0.0133	0.000E+00	0.0000	2.815E-03	0.0239	2.024E-05	0.0002	7.096E-07	0.0000	1.801E-04	0.0015
Pu-239	1.669E-05	0.0001	1.300E-03	0.0110	0.000E+00	0.0000	1.169E-04	0.0010	1.550E-06	0.0000	5.492E-08	0.0000	1.497E-04	0.0013
Pu-240	1.088E-05	0.0001	1.300E-03	0.0110	0.000E+00	0.0000	1.169E-04	0.0010	1.549E-06	0.0000	5.491E-08	0.0000	1.497E-04	0.0013
Tc-99	7.350E-06	0.0001	2.497E-08	0.0000	0.000E+00	0.0000	4.428E-04	0.0038	2.638E-08	0.0000	7.215E-07	0.0000	6.117E-08	0.0000
U-234	2.518E-05	0.0002	3.985E-04	0.0034	0.000E+00	0.0000	3.446E-05	0.0003	1.624E-06	0.0000	2.675E-06	0.0000	1.193E-05	0.0001
U-235	4.149E-02	0.3527	3.715E-04	0.0032	0.000E+00	0.0000	3.267E-05	0.0003	1.534E-06	0.0000	2.527E-06	0.0000	1.128E-05	0.0001
U-238	7.242E-03	0.0616	3.563E-04	0.0030	0.000E+00	0.0000	3.272E-05	0.0003	1.542E-06	0.0000	2.540E-06	0.0000	1.132E-05	0.0001
Total	1.066E-01	0.9061	6.636E-03	0.0564	0.000E+00	0.0000	3.711E-03	0.0315	2.886E-05	0.0002	9.398E-06	0.0001	6.678E-04	0.0057

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.450E-03	0.0378
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.956E-02	0.5062
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.585E-03	0.0135
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-03	0.0134
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.510E-04	0.0038
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.744E-04	0.0040
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.191E-02	0.3562
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.646E-03	0.0650
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.177E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.820E-03	0.0249	1.328E-03	0.0117	0.000E+00	0.0000	1.187E-04	0.0010	7.864E-07	0.0000	1.126E-07	0.0000	1.519E-04	0.0013
Np-237	5.161E-02	0.4552	1.467E-03	0.0129	0.000E+00	0.0000	2.634E-03	0.0232	1.894E-05	0.0002	6.640E-07	0.0000	1.685E-04	0.0015
Pu-239	1.661E-05	0.0001	1.288E-03	0.0114	0.000E+00	0.0000	1.158E-04	0.0010	1.535E-06	0.0000	5.441E-08	0.0000	1.483E-04	0.0013
Pu-240	1.085E-05	0.0001	1.287E-03	0.0114	0.000E+00	0.0000	1.158E-04	0.0010	1.535E-06	0.0000	5.439E-08	0.0000	1.483E-04	0.0013
Tc-99	7.220E-06	0.0001	2.443E-08	0.0000	0.000E+00	0.0000	4.332E-04	0.0038	2.580E-08	0.0000	7.059E-07	0.0000	5.984E-08	0.0000
U-234	2.497E-05	0.0002	3.930E-04	0.0035	0.000E+00	0.0000	3.398E-05	0.0003	1.602E-06	0.0000	2.638E-06	0.0000	1.176E-05	0.0001
U-235	4.105E-02	0.3620	3.665E-04	0.0032	0.000E+00	0.0000	3.236E-05	0.0003	1.513E-06	0.0000	2.492E-06	0.0000	1.114E-05	0.0001
U-238	7.164E-03	0.0632	3.514E-04	0.0031	0.000E+00	0.0000	3.226E-05	0.0003	1.521E-06	0.0000	2.505E-06	0.0000	1.117E-05	0.0001
Total	1.027E-01	0.9058	6.480E-03	0.0571	0.000E+00	0.0000	3.516E-03	0.0310	2.746E-05	0.0002	9.226E-06	0.0001	6.512E-04	0.0057

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.420E-03	0.0390
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.590E-02	0.4930
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.570E-03	0.0138
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.564E-03	0.0138
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.413E-04	0.0039
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.679E-04	0.0041
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.147E-02	0.3657
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.562E-03	0.0667
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.134E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.780E-03	0.0278	1.275E-03	0.0127	0.000E+00	0.0000	1.139E-04	0.0011	7.551E-07	0.0000	1.081E-07	0.0000	1.459E-04	0.0015
Np-237	4.138E-02	0.4130	1.162E-03	0.0116	0.000E+00	0.0000	2.086E-03	0.0208	1.501E-05	0.0001	5.260E-07	0.0000	1.335E-04	0.0013
Pu-239	1.631E-05	0.0002	1.245E-03	0.0124	0.000E+00	0.0000	1.120E-04	0.0011	1.485E-06	0.0000	5.262E-08	0.0000	1.435E-04	0.0014
Pu-240	1.076E-05	0.0001	1.244E-03	0.0124	0.000E+00	0.0000	1.119E-04	0.0011	1.484E-06	0.0000	5.258E-08	0.0000	1.433E-04	0.0014
Tc-99	6.784E-06	0.0001	2.261E-08	0.0000	0.000E+00	0.0000	4.010E-04	0.0040	2.389E-08	0.0000	6.534E-07	0.0000	5.539E-08	0.0000
U-234	2.431E-05	0.0002	3.739E-04	0.0037	0.000E+00	0.0000	3.233E-05	0.0003	1.524E-06	0.0000	2.510E-06	0.0000	1.119E-05	0.0001
U-235	3.953E-02	0.3946	3.498E-04	0.0035	0.000E+00	0.0000	3.130E-05	0.0003	1.440E-06	0.0000	2.371E-06	0.0000	1.068E-05	0.0001
U-238	6.895E-03	0.0688	3.343E-04	0.0033	0.000E+00	0.0000	3.070E-05	0.0003	1.447E-06	0.0000	2.383E-06	0.0000	1.062E-05	0.0001
Total	9.064E-02	0.9048	5.985E-03	0.0597	0.000E+00	0.0000	2.920E-03	0.0291	2.316E-05	0.0002	8.657E-06	0.0001	5.987E-04	0.0060

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.316E-03	0.0431
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.477E-02	0.4469
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.519E-03	0.0152
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.512E-03	0.0151
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.085E-04	0.0041
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.458E-04	0.0045
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.993E-02	0.3986
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.274E-03	0.0726
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.002E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.668E-03	0.0364	1.129E-03	0.0154	0.000E+00	0.0000	1.010E-04	0.0014	6.691E-07	0.0000	9.580E-08	0.0000	1.293E-04	0.0018
Np-237	2.193E-02	0.2988	5.942E-04	0.0081	0.000E+00	0.0000	1.067E-03	0.0145	7.674E-06	0.0001	2.692E-07	0.0000	6.826E-05	0.0009
Pu-239	1.544E-05	0.0002	1.127E-03	0.0154	0.000E+00	0.0000	1.014E-04	0.0014	1.344E-06	0.0000	4.762E-08	0.0000	1.298E-04	0.0018
Pu-240	1.051E-05	0.0001	1.124E-03	0.0153	0.000E+00	0.0000	1.011E-04	0.0014	1.340E-06	0.0000	4.751E-08	0.0000	1.295E-04	0.0018
Tc-99	5.668E-06	0.0001	1.804E-08	0.0000	0.000E+00	0.0000	3.200E-04	0.0044	1.906E-08	0.0000	5.213E-07	0.0000	4.419E-08	0.0000
U-234	2.294E-05	0.0003	3.230E-04	0.0044	0.000E+00	0.0000	2.792E-05	0.0004	1.316E-06	0.0000	2.167E-06	0.0000	9.665E-06	0.0001
U-235	3.540E-02	0.4824	3.069E-04	0.0042	0.000E+00	0.0000	2.836E-05	0.0004	1.243E-06	0.0000	2.048E-06	0.0000	9.492E-06	0.0001
U-238	6.161E-03	0.0840	2.887E-04	0.0039	0.000E+00	0.0000	2.651E-05	0.0004	1.249E-06	0.0000	2.058E-06	0.0000	9.173E-06	0.0001
Total	6.621E-02	0.9022	4.893E-03	0.0667	0.000E+00	0.0000	1.773E-03	0.0242	1.485E-05	0.0002	7.254E-06	0.0001	4.852E-04	0.0066

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.029E-03	0.0549
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.367E-02	0.3225
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.375E-03	0.0187
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.367E-03	0.0186
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.262E-04	0.0044
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.870E-04	0.0053
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.575E-02	0.4871
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.489E-03	0.0884
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.339E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.296E-03	0.0659	6.834E-04	0.0196	0.000E+00	0.0000	6.110E-05	0.0018	4.049E-07	0.0000	5.796E-08	0.0000	7.821E-05	0.0022
Np-237	2.250E-03	0.0646	5.255E-05	0.0015	0.000E+00	0.0000	9.431E-05	0.0027	6.784E-07	0.0000	2.396E-08	0.0000	6.034E-06	0.0002
Pu-239	1.229E-05	0.0004	7.338E-04	0.0211	0.000E+00	0.0000	6.602E-05	0.0019	8.750E-07	0.0000	3.101E-08	0.0000	8.452E-05	0.0024
Pu-240	9.671E-06	0.0003	7.281E-04	0.0209	0.000E+00	0.0000	6.551E-05	0.0019	8.682E-07	0.0000	3.077E-08	0.0000	8.387E-05	0.0024
Tc-99	2.933E-06	0.0001	7.565E-09	0.0000	0.000E+00	0.0000	1.342E-04	0.0039	7.995E-09	0.0000	2.187E-07	0.0000	1.853E-08	0.0000
U-234	2.179E-05	0.0006	1.788E-04	0.0051	0.000E+00	0.0000	1.547E-05	0.0004	7.272E-07	0.0000	1.198E-06	0.0000	5.350E-06	0.0002
U-235	2.285E-02	0.6557	1.860E-04	0.0053	0.000E+00	0.0000	1.874E-05	0.0005	6.881E-07	0.0000	1.132E-06	0.0000	6.009E-06	0.0002
U-238	3.935E-03	0.1129	1.595E-04	0.0046	0.000E+00	0.0000	1.465E-05	0.0004	6.905E-07	0.0000	1.137E-06	0.0000	5.070E-06	0.0001
Total	3.138E-02	0.9004	2.722E-03	0.0781	0.000E+00	0.0000	4.700E-04	0.0135	4.940E-06	0.0001	3.830E-06	0.0001	2.691E-04	0.0077

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.120E-03	0.0895
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.404E-03	0.0690
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.975E-04	0.0258
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.880E-04	0.0255
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.374E-04	0.0039
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.233E-04	0.0064
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.306E-02	0.6618
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.117E-03	0.1181
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.485E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	4.465E-03	4.450E-03	4.420E-03	4.316E-03	4.028E-03	3.119E-03	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	9.966E-09	2.948E-08	6.646E-08	1.765E-07	3.660E-07	4.200E-07	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	1.299E-16	8.853E-16	4.516E-15	3.630E-14	2.285E-13	9.232E-13	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	4.839E-19	7.188E-18	8.210E-17	2.018E-15	3.985E-14	6.845E-13	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		4.465E-03	4.450E-03	4.420E-03	4.316E-03	4.029E-03	3.120E-03	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	6.147E-02	5.956E-02	5.590E-02	4.477E-02	2.367E-02	2.403E-03	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	1.191E-09	3.472E-09	7.764E-09	2.029E-08	4.029E-08	3.860E-08	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	5.968E-12	4.129E-11	2.127E-10	1.737E-09	1.136E-08	5.353E-08	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		6.147E-02	5.956E-02	5.590E-02	4.477E-02	2.367E-02	2.404E-03	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	1.592E-03	1.585E-03	1.570E-03	1.519E-03	1.375E-03	8.975E-04	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	2.075E-11	6.201E-11	1.435E-10	4.179E-10	1.112E-09	2.559E-09	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	6.034E-17	4.235E-16	2.225E-15	1.931E-14	1.481E-13	1.080E-12	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	3.459E-18	5.126E-17	5.841E-16	1.427E-14	2.779E-13	4.619E-12	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		1.592E-03	1.585E-03	1.570E-03	1.519E-03	1.375E-03	8.975E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	7.851E-11	7.814E-11	7.740E-11	7.484E-11	6.765E-11	4.396E-11	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	1.586E-03	1.579E-03	1.564E-03	1.512E-03	1.367E-03	8.880E-04	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	6.530E-12	1.953E-11	4.510E-11	1.299E-10	3.342E-10	6.684E-10	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	1.277E-21	8.879E-21	4.640E-20	3.997E-19	3.014E-18	2.052E-17	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	1.908E-21	2.785E-20	3.054E-19	6.555E-18	9.650E-17	1.032E-15	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	2.023E-22	5.761E-21	1.218E-19	5.429E-18	1.192E-16	1.474E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		1.586E-03	1.579E-03	1.564E-03	1.512E-03	1.367E-03	8.880E-04	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	4.560E-04	4.510E-04	4.413E-04	4.085E-04	3.262E-04	1.374E-04	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	4.776E-04	4.744E-04	4.679E-04	4.456E-04	3.860E-04	2.169E-04	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	4.989E-09	1.487E-08	3.431E-08	9.905E-08	2.569E-07	5.311E-07	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	3.124E-10	2.180E-09	1.144E-08	9.946E-08	7.704E-07	5.825E-06	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	1.876E-14	2.050E-13	1.889E-12	3.977E-11	7.247E-10	1.131E-08	0.000E+00	0.000E+00
U-234	ΣDSR (j)		4.776E-04	4.744E-04	4.679E-04	4.458E-04	3.870E-04	2.233E-04	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	4.214E-02	4.191E-02	4.146E-02	3.992E-02	3.571E-02	2.293E-02	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	1.846E-07	5.540E-07	1.282E-06	3.719E-06	9.753E-06	2.108E-05	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	1.402E-08	9.671E-08	4.965E-07	4.015E-06	2.563E-05	1.132E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		4.214E-02	4.191E-02	4.147E-02	3.993E-02	3.575E-02	2.306E-02	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	2.228E-08	2.213E-08	2.182E-08	2.078E-08	1.797E-08	1.003E-08	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	7.688E-03	7.646E-03	7.562E-03	7.274E-03	6.489E-03	4.116E-03	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	6.762E-10	2.016E-09	4.641E-09	1.326E-08	3.337E-08	6.181E-08	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	4.719E-15	3.278E-14	1.711E-13	1.468E-12	1.094E-11	7.191E-11	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	2.212E-16	3.307E-15	3.827E-14	9.836E-13	2.190E-11	5.285E-10	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	1.179E-20	2.635E-19	5.107E-18	3.082E-16	1.633E-14	8.696E-13	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		7.688E-03	7.646E-03	7.562E-03	7.274E-03	6.489E-03	4.117E-03	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM - AF 3 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	5.599E+03	5.618E+03	5.657E+03	5.793E+03	6.206E+03	8.014E+03	*3.431E+12	*3.431E+12
Np-237	4.067E+02	4.198E+02	4.472E+02	5.584E+02	1.056E+03	1.040E+04	*7.047E+08	*7.047E+08
Pu-239	1.570E+04	1.578E+04	1.592E+04	1.646E+04	1.818E+04	2.786E+04	*6.214E+10	*6.214E+10
Pu-240	1.576E+04	1.584E+04	1.599E+04	1.653E+04	1.829E+04	2.815E+04	*2.278E+11	*2.278E+11
Tc-99	5.483E+04	5.543E+04	5.665E+04	6.119E+04	7.663E+04	1.820E+05	*1.697E+10	*1.697E+10
U-234	5.234E+04	5.270E+04	5.343E+04	5.608E+04	6.460E+04	1.120E+05	*6.247E+09	*6.247E+09
U-235	5.933E+02	5.965E+02	6.029E+02	6.261E+02	6.993E+02	1.084E+03	*2.161E+06	*2.161E+06
U-238	3.252E+03	3.270E+03	3.306E+03	3.437E+03	3.853E+03	6.073E+03	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	4.465E-03	5.599E+03	4.465E-03	5.599E+03
Np-237	1.000E+00	0.000E+00	6.147E-02	4.067E+02	6.147E-02	4.067E+02
Pu-239	1.000E+00	0.000E+00	1.592E-03	1.570E+04	1.592E-03	1.570E+04
Pu-240	1.000E+00	0.000E+00	1.586E-03	1.576E+04	1.586E-03	1.576E+04
Tc-99	1.000E+00	0.000E+00	4.560E-04	5.483E+04	4.560E-04	5.483E+04
U-234	1.000E+00	0.000E+00	4.776E-04	5.234E+04	4.776E-04	5.234E+04
U-235	1.000E+00	0.000E+00	4.214E-02	5.933E+02	4.214E-02	5.933E+02
U-238	1.000E+00	0.000E+00	7.688E-03	3.252E+03	7.688E-03	3.252E+03

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	4.465E-03	4.450E-03	4.420E-03	4.316E-03	4.028E-03	3.119E-03	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	9.966E-09	2.948E-08	6.646E-08	1.765E-07	3.660E-07	4.200E-07	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	6.147E-02	5.956E-02	5.590E-02	4.477E-02	2.367E-02	2.403E-03	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		6.147E-02	5.956E-02	5.590E-02	4.477E-02	2.367E-02	2.404E-03	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	1.299E-16	8.853E-16	4.516E-15	3.630E-14	2.285E-13	9.232E-13	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	1.191E-09	3.472E-09	7.764E-09	2.029E-08	4.029E-08	3.860E-08	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		1.191E-09	3.472E-09	7.764E-09	2.029E-08	4.029E-08	3.860E-08	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	4.839E-19	7.188E-18	8.210E-17	2.018E-15	3.985E-14	6.845E-13	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	5.968E-12	4.129E-11	2.127E-10	1.737E-09	1.136E-08	5.353E-08	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		5.968E-12	4.129E-11	2.127E-10	1.737E-09	1.136E-08	5.353E-08	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	1.592E-03	1.585E-03	1.570E-03	1.519E-03	1.375E-03	8.975E-04	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	2.075E-11	6.201E-11	1.435E-10	4.179E-10	1.112E-09	2.559E-09	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	4.214E-02	4.191E-02	4.146E-02	3.992E-02	3.571E-02	2.293E-02	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		4.214E-02	4.191E-02	4.146E-02	3.992E-02	3.571E-02	2.293E-02	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	6.034E-17	4.235E-16	2.225E-15	1.931E-14	1.481E-13	1.080E-12	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	1.846E-07	5.540E-07	1.282E-06	3.719E-06	9.753E-06	2.108E-05	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		1.846E-07	5.540E-07	1.282E-06	3.719E-06	9.753E-06	2.108E-05	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	3.459E-18	5.126E-17	5.841E-16	1.427E-14	2.779E-13	4.619E-12	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	1.402E-08	9.671E-08	4.965E-07	4.015E-06	2.563E-05	1.132E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		1.402E-08	9.671E-08	4.965E-07	4.015E-06	2.563E-05	1.132E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	7.851E-11	7.814E-11	7.740E-11	7.484E-11	6.765E-11	4.396E-11	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	1.586E-03	1.579E-03	1.564E-03	1.512E-03	1.367E-03	8.880E-04	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		1.586E-03	1.579E-03	1.564E-03	1.512E-03	1.367E-03	8.880E-04	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	6.530E-12	1.953E-11	4.510E-11	1.299E-10	3.342E-10	6.684E-10	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	1.277E-21	8.879E-21	4.640E-20	3.997E-19	3.014E-18	2.052E-17	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	1.908E-21	2.785E-20	3.054E-19	6.555E-18	9.650E-17	1.032E-15	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	2.023E-22	5.761E-21	1.218E-19	5.429E-18	1.192E-16	1.474E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	4.560E-04	4.510E-04	4.413E-04	4.085E-04	3.262E-04	1.374E-04	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	4.776E-04	4.744E-04	4.679E-04	4.456E-04	3.860E-04	2.169E-04	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	6.762E-10	2.016E-09	4.641E-09	1.326E-08	3.337E-08	6.181E-08	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		4.776E-04	4.744E-04	4.679E-04	4.456E-04	3.860E-04	2.170E-04	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	4.989E-09	1.487E-08	3.431E-08	9.905E-08	2.569E-07	5.311E-07	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	4.719E-15	3.278E-14	1.711E-13	1.468E-12	1.094E-11	7.191E-11	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		4.989E-09	1.487E-08	3.431E-08	9.905E-08	2.569E-07	5.312E-07	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM - AF 3 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	3.124E-10	2.180E-09	1.144E-08	9.946E-08	7.704E-07	5.825E-06	0.000E+00	0.000E+00
Ra-226	U-238	9.999E-01	2.212E-16	3.307E-15	3.827E-14	9.836E-13	2.190E-11	5.285E-10	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)		3.124E-10	2.180E-09	1.144E-08	9.947E-08	7.704E-07	5.826E-06	0.000E+00	0.000E+00
Pb-210	U-234	1.000E+00	1.876E-14	2.050E-13	1.889E-12	3.977E-11	7.247E-10	1.131E-08	0.000E+00	0.000E+00
Pb-210	U-238	9.999E-01	1.179E-20	2.635E-19	5.107E-18	3.082E-16	1.633E-14	8.696E-13	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		1.876E-14	2.050E-13	1.889E-12	3.977E-11	7.247E-10	1.131E-08	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	2.228E-08	2.213E-08	2.182E-08	2.078E-08	1.797E-08	1.003E-08	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	7.688E-03	7.646E-03	7.562E-03	7.274E-03	6.489E-03	4.116E-03	0.000E+00	0.000E+00
U-238	ΣDOSE(j)		7.688E-03	7.646E-03	7.562E-03	7.274E-03	6.489E-03	4.116E-03	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM - AF 3 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Summary : Hematite - Surface CSM - AF 3 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.43 seconds

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Summary : Hematite - Surface CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Surface CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Surface CSM - AF 30 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Surface CSM - AF 30 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Surface CSM - AF 30 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Surface CSM - AF 30 m^2

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Surface CSM - AF 30 m^2

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Am-241	1.000E+00
Thickness:	0.15 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.759E-01	3.689E-01	3.553E-01	3.132E-01	2.285E-01	1.102E-01	0.000E+00	0.000E+00
M(t):	1.504E-02	1.475E-02	1.421E-02	1.253E-02	9.141E-03	4.409E-03	0.000E+00	0.000E+00

Maximum TDOSE(t): 3.759E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Surface CSM - AF 30 m^2

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.584E-03	0.0202	1.747E-03	0.0046	0.000E+00	0.0000	1.207E-03	0.0032	8.000E-06	0.0000	1.146E-06	0.0000	1.546E-03	0.0041
Np-237	1.694E-01	0.4507	2.096E-03	0.0056	0.000E+00	0.0000	2.909E-02	0.0774	2.092E-04	0.0006	7.335E-06	0.0000	1.861E-03	0.0050
Pu-239	4.850E-05	0.0001	1.689E-03	0.0045	0.000E+00	0.0000	1.175E-03	0.0031	1.557E-05	0.0000	5.517E-07	0.0000	1.504E-03	0.0040
Pu-240	2.814E-05	0.0001	1.689E-03	0.0045	0.000E+00	0.0000	1.175E-03	0.0031	1.557E-05	0.0000	5.517E-07	0.0000	1.504E-03	0.0040
Tc-99	2.124E-05	0.0001	3.265E-08	0.0000	0.000E+00	0.0000	4.477E-03	0.0119	2.666E-07	0.0000	7.294E-06	0.0000	6.184E-07	0.0000
U-234	6.994E-05	0.0002	5.191E-04	0.0014	0.000E+00	0.0000	3.470E-04	0.0009	1.636E-05	0.0000	2.694E-05	0.0001	1.201E-04	0.0003
U-235	1.227E-01	0.3264	4.838E-04	0.0013	0.000E+00	0.0000	3.282E-04	0.0009	1.545E-05	0.0000	2.545E-05	0.0001	1.135E-04	0.0003
U-238	2.207E-02	0.0587	4.642E-04	0.0012	0.000E+00	0.0000	3.295E-04	0.0009	1.553E-05	0.0000	2.558E-05	0.0001	1.140E-04	0.0003
Total	3.220E-01	0.8564	8.688E-03	0.0231	0.000E+00	0.0000	3.813E-02	0.1014	2.960E-04	0.0008	9.485E-05	0.0003	6.764E-03	0.0180

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.209E-02	0.0322
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.027E-01	0.5392
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.433E-03	0.0118
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.412E-03	0.0117
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.507E-03	0.0120
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.099E-03	0.0029
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.237E-01	0.3290
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E-02	0.0612
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.759E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.571E-03	0.0205	1.737E-03	0.0047	0.000E+00	0.0000	1.200E-03	0.0033	7.954E-06	0.0000	1.139E-06	0.0000	1.537E-03	0.0042
Np-237	1.643E-01	0.4453	2.028E-03	0.0055	0.000E+00	0.0000	2.815E-02	0.0763	2.024E-04	0.0005	7.096E-06	0.0000	1.801E-03	0.0049
Pu-239	4.840E-05	0.0001	1.681E-03	0.0046	0.000E+00	0.0000	1.169E-03	0.0032	1.550E-05	0.0000	5.492E-07	0.0000	1.497E-03	0.0041
Pu-240	2.811E-05	0.0001	1.681E-03	0.0046	0.000E+00	0.0000	1.169E-03	0.0032	1.549E-05	0.0000	5.491E-07	0.0000	1.497E-03	0.0041
Tc-99	2.107E-05	0.0001	3.230E-08	0.0000	0.000E+00	0.0000	4.428E-03	0.0120	2.638E-07	0.0000	7.215E-06	0.0000	6.117E-07	0.0000
U-234	6.968E-05	0.0002	5.155E-04	0.0014	0.000E+00	0.0000	3.446E-04	0.0009	1.624E-05	0.0000	2.675E-05	0.0001	1.193E-04	0.0003
U-235	1.221E-01	0.3311	4.805E-04	0.0013	0.000E+00	0.0000	3.267E-04	0.0009	1.534E-05	0.0000	2.527E-05	0.0001	1.128E-04	0.0003
U-238	2.196E-02	0.0595	4.609E-04	0.0012	0.000E+00	0.0000	3.272E-04	0.0009	1.542E-05	0.0000	2.540E-05	0.0001	1.132E-04	0.0003
Total	3.161E-01	0.8570	8.584E-03	0.0233	0.000E+00	0.0000	3.711E-02	0.1006	2.886E-04	0.0008	9.398E-05	0.0003	6.678E-03	0.0181

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.205E-02	0.0327
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.964E-01	0.5326
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.412E-03	0.0120
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.391E-03	0.0119
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.458E-03	0.0121
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.092E-03	0.0030
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.231E-01	0.3337
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.290E-02	0.0621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.689E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 30 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.544E-03	0.0212	1.717E-03	0.0048	0.000E+00	0.0000	1.187E-03	0.0033	7.864E-06	0.0000	1.126E-06	0.0000	1.519E-03	0.0043
Np-237	1.544E-01	0.4346	1.897E-03	0.0053	0.000E+00	0.0000	2.634E-02	0.0741	1.894E-04	0.0005	6.640E-06	0.0000	1.685E-03	0.0047
Pu-239	4.820E-05	0.0001	1.666E-03	0.0047	0.000E+00	0.0000	1.158E-03	0.0033	1.535E-05	0.0000	5.441E-07	0.0000	1.483E-03	0.0042
Pu-240	2.806E-05	0.0001	1.665E-03	0.0047	0.000E+00	0.0000	1.158E-03	0.0033	1.535E-05	0.0000	5.439E-07	0.0000	1.483E-03	0.0042
Tc-99	2.074E-05	0.0001	3.160E-08	0.0000	0.000E+00	0.0000	4.332E-03	0.0122	2.580E-07	0.0000	7.059E-06	0.0000	5.984E-07	0.0000
U-234	6.918E-05	0.0002	5.083E-04	0.0014	0.000E+00	0.0000	3.398E-04	0.0010	1.602E-05	0.0000	2.638E-05	0.0001	1.176E-04	0.0003
U-235	1.210E-01	0.3406	4.741E-04	0.0013	0.000E+00	0.0000	3.236E-04	0.0009	1.513E-05	0.0000	2.492E-05	0.0001	1.114E-04	0.0003
U-238	2.174E-02	0.0612	4.545E-04	0.0013	0.000E+00	0.0000	3.227E-04	0.0009	1.521E-05	0.0000	2.505E-05	0.0001	1.117E-04	0.0003
Total	3.049E-01	0.8581	8.382E-03	0.0236	0.000E+00	0.0000	3.516E-02	0.0990	2.746E-04	0.0008	9.226E-05	0.0003	6.512E-03	0.0183

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.198E-02	0.0337
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.845E-01	0.5193
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.371E-03	0.0123
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.350E-03	0.0122
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.361E-03	0.0123
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E-03	0.0030
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.220E-01	0.3433
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.267E-02	0.0638
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.553E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.451E-03	0.0238	1.649E-03	0.0053	0.000E+00	0.0000	1.140E-03	0.0036	7.551E-06	0.0000	1.081E-06	0.0000	1.459E-03	0.0047
Np-237	1.243E-01	0.3967	1.503E-03	0.0048	0.000E+00	0.0000	2.086E-02	0.0666	1.501E-04	0.0005	5.260E-06	0.0000	1.335E-03	0.0043
Pu-239	4.750E-05	0.0002	1.611E-03	0.0051	0.000E+00	0.0000	1.120E-03	0.0036	1.485E-05	0.0000	5.262E-07	0.0000	1.435E-03	0.0046
Pu-240	2.786E-05	0.0001	1.610E-03	0.0051	0.000E+00	0.0000	1.120E-03	0.0036	1.484E-05	0.0000	5.258E-07	0.0000	1.433E-03	0.0046
Tc-99	1.959E-05	0.0001	2.925E-08	0.0000	0.000E+00	0.0000	4.010E-03	0.0128	2.389E-07	0.0000	6.534E-06	0.0000	5.539E-07	0.0000
U-234	6.764E-05	0.0002	4.837E-04	0.0015	0.000E+00	0.0000	3.233E-04	0.0010	1.524E-05	0.0000	2.510E-05	0.0001	1.119E-04	0.0004
U-235	1.171E-01	0.3739	4.525E-04	0.0014	0.000E+00	0.0000	3.130E-04	0.0010	1.440E-05	0.0000	2.371E-05	0.0001	1.068E-04	0.0003
U-238	2.099E-02	0.0670	4.325E-04	0.0014	0.000E+00	0.0000	3.070E-04	0.0010	1.447E-05	0.0000	2.383E-05	0.0001	1.062E-04	0.0003
Total	2.700E-01	0.8619	7.741E-03	0.0247	0.000E+00	0.0000	2.920E-02	0.0932	2.316E-04	0.0007	8.657E-05	0.0003	5.987E-03	0.0191

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.171E-02	0.0374
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.481E-01	0.4729
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.229E-03	0.0135
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.206E-03	0.0134
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.037E-03	0.0129
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.027E-03	0.0033
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.180E-01	0.3768
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.188E-02	0.0698
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.132E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.189E-03	0.0315	1.461E-03	0.0064	0.000E+00	0.0000	1.010E-03	0.0044	6.691E-06	0.0000	9.580E-07	0.0000	1.293E-03	0.0057
Np-237	6.666E-02	0.2917	7.686E-04	0.0034	0.000E+00	0.0000	1.067E-02	0.0467	7.674E-05	0.0003	2.692E-06	0.0000	6.826E-04	0.0030
Pu-239	4.546E-05	0.0002	1.458E-03	0.0064	0.000E+00	0.0000	1.014E-03	0.0044	1.344E-05	0.0001	4.762E-07	0.0000	1.298E-03	0.0057
Pu-240	2.730E-05	0.0001	1.454E-03	0.0064	0.000E+00	0.0000	1.011E-03	0.0044	1.340E-05	0.0001	4.751E-07	0.0000	1.295E-03	0.0057
Tc-99	1.664E-05	0.0001	2.334E-08	0.0000	0.000E+00	0.0000	3.200E-03	0.0140	1.906E-07	0.0000	5.213E-06	0.0000	4.419E-07	0.0000
U-234	6.475E-05	0.0003	4.178E-04	0.0018	0.000E+00	0.0000	2.792E-04	0.0012	1.316E-05	0.0001	2.167E-05	0.0001	9.665E-05	0.0004
U-235	1.065E-01	0.4658	3.970E-04	0.0017	0.000E+00	0.0000	2.836E-04	0.0012	1.243E-05	0.0001	2.048E-05	0.0001	9.492E-05	0.0004
U-238	1.893E-02	0.0828	3.734E-04	0.0016	0.000E+00	0.0000	2.651E-04	0.0012	1.249E-05	0.0001	2.058E-05	0.0001	9.173E-05	0.0004
Total	1.994E-01	0.8725	6.330E-03	0.0277	0.000E+00	0.0000	1.773E-02	0.0776	1.485E-04	0.0007	7.254E-05	0.0003	4.852E-03	0.0212

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.096E-02	0.0480
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.886E-02	0.3451
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.829E-03	0.0168
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.802E-03	0.0166
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.222E-03	0.0141
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.932E-04	0.0039
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.073E-01	0.4694
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.970E-02	0.0862
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.285E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.310E-03	0.0572	8.840E-04	0.0080	0.000E+00	0.0000	6.111E-04	0.0055	4.049E-06	0.0000	5.796E-07	0.0000	7.821E-04	0.0071
Np-237	7.180E-03	0.0651	6.797E-05	0.0006	0.000E+00	0.0000	9.431E-04	0.0086	6.784E-06	0.0001	2.396E-07	0.0000	6.034E-05	0.0005
Pu-239	3.764E-05	0.0003	9.492E-04	0.0086	0.000E+00	0.0000	6.602E-04	0.0060	8.750E-06	0.0001	3.101E-07	0.0000	8.452E-04	0.0077
Pu-240	2.534E-05	0.0002	9.418E-04	0.0085	0.000E+00	0.0000	6.551E-04	0.0059	8.682E-06	0.0001	3.077E-07	0.0000	8.387E-04	0.0076
Tc-99	9.211E-06	0.0001	9.785E-09	0.0000	0.000E+00	0.0000	1.342E-03	0.0122	7.995E-08	0.0000	2.187E-06	0.0000	1.853E-07	0.0000
U-234	6.564E-05	0.0006	2.312E-04	0.0021	0.000E+00	0.0000	1.547E-04	0.0014	7.272E-06	0.0001	1.198E-05	0.0001	5.350E-05	0.0005
U-235	7.305E-02	0.6627	2.407E-04	0.0022	0.000E+00	0.0000	1.874E-04	0.0017	6.881E-06	0.0001	1.132E-05	0.0001	6.009E-05	0.0005
U-238	1.255E-02	0.1139	2.064E-04	0.0019	0.000E+00	0.0000	1.465E-04	0.0013	6.905E-06	0.0001	1.137E-05	0.0001	5.070E-05	0.0005
Total	9.923E-02	0.9002	3.521E-03	0.0319	0.000E+00	0.0000	4.700E-03	0.0426	4.940E-05	0.0004	3.830E-05	0.0003	2.691E-03	0.0244

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.591E-03	0.0779
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.258E-03	0.0749
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.501E-03	0.0227
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.470E-03	0.0224
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.353E-03	0.0123
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.243E-04	0.0048
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.355E-02	0.6673
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.298E-02	0.1177
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.102E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 30 m^2

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.209E-02	1.205E-02	1.198E-02	1.171E-02	1.096E-02	8.590E-03	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	3.268E-08	9.704E-08	2.192E-07	5.836E-07	1.219E-06	1.443E-06	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	3.330E-16	2.176E-15	1.088E-14	8.660E-14	5.453E-13	2.242E-12	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	1.404E-18	2.084E-17	2.382E-16	5.878E-15	1.174E-13	2.117E-12	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		1.209E-02	1.205E-02	1.198E-02	1.171E-02	1.096E-02	8.591E-03	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	2.027E-01	1.964E-01	1.845E-01	1.481E-01	7.886E-02	8.258E-03	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	2.974E-09	8.386E-09	1.855E-08	4.825E-08	9.603E-08	9.369E-08	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	1.731E-11	1.197E-10	6.171E-10	5.059E-09	3.349E-08	1.655E-07	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		2.027E-01	1.964E-01	1.845E-01	1.481E-01	7.886E-02	8.258E-03	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	4.433E-03	4.412E-03	4.371E-03	4.229E-03	3.829E-03	2.501E-03	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	6.089E-11	1.821E-10	4.221E-10	1.235E-09	3.336E-09	8.163E-09	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	2.502E-16	1.772E-15	9.345E-15	8.124E-14	6.231E-13	4.547E-12	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	9.732E-18	1.435E-16	1.632E-15	3.998E-14	7.881E-13	1.380E-11	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		4.433E-03	4.412E-03	4.371E-03	4.229E-03	3.829E-03	2.501E-03	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	2.184E-10	2.174E-10	2.153E-10	2.082E-10	1.882E-10	1.223E-10	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	4.412E-03	4.391E-03	4.350E-03	4.206E-03	3.802E-03	2.470E-03	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	1.479E-11	4.459E-11	1.032E-10	2.977E-10	7.667E-10	1.539E-09	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	2.155E-21	1.479E-20	7.683E-20	6.598E-19	4.973E-18	3.390E-17	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	6.090E-21	8.907E-20	9.782E-19	2.106E-17	3.123E-16	3.441E-15	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	6.340E-22	1.804E-20	3.816E-19	1.705E-17	3.770E-16	4.805E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		4.412E-03	4.391E-03	4.350E-03	4.206E-03	3.802E-03	2.470E-03	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	4.507E-03	4.458E-03	4.361E-03	4.037E-03	3.222E-03	1.353E-03	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.099E-03	1.092E-03	1.077E-03	1.026E-03	8.903E-04	5.041E-04	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	8.707E-09	2.572E-08	5.920E-08	1.709E-07	4.447E-07	9.369E-07	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	9.874E-10	6.898E-09	3.622E-08	3.158E-07	2.464E-06	1.918E-05	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	1.719E-13	1.817E-12	1.623E-11	3.321E-10	5.939E-09	8.872E-08	0.000E+00	0.000E+00
U-234	ΣDSR (j)		1.099E-03	1.092E-03	1.077E-03	1.027E-03	8.932E-04	5.243E-04	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	1.237E-01	1.231E-01	1.220E-01	1.180E-01	1.071E-01	7.313E-02	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	7.701E-07	2.326E-06	5.393E-06	1.566E-05	4.105E-05	8.876E-05	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	3.934E-08	2.703E-07	1.386E-06	1.125E-05	7.268E-05	3.381E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		1.237E-01	1.231E-01	1.220E-01	1.180E-01	1.073E-01	7.355E-02	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	5.097E-08	5.062E-08	4.993E-08	4.753E-08	4.112E-08	2.298E-08	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	2.302E-02	2.290E-02	2.267E-02	2.188E-02	1.970E-02	1.297E-02	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	1.557E-09	4.642E-09	1.069E-08	3.055E-08	7.698E-08	1.436E-07	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	8.302E-15	5.697E-14	2.959E-13	2.534E-12	1.894E-11	1.268E-10	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	6.990E-16	1.046E-14	1.212E-13	3.123E-12	7.005E-11	1.740E-09	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	1.090E-19	2.362E-18	4.430E-17	2.587E-15	1.341E-13	6.825E-12	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		2.302E-02	2.290E-02	2.267E-02	2.188E-02	1.970E-02	1.298E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM - AF 30 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	2.067E+03	2.074E+03	2.087E+03	2.136E+03	2.281E+03	2.910E+03	*3.431E+12	*3.431E+12
Np-237	1.233E+02	1.273E+02	1.355E+02	1.688E+02	3.170E+02	3.027E+03	*7.047E+08	*7.047E+08
Pu-239	5.640E+03	5.666E+03	5.719E+03	5.912E+03	6.529E+03	9.995E+03	*6.214E+10	*6.214E+10
Pu-240	5.666E+03	5.693E+03	5.747E+03	5.944E+03	6.576E+03	1.012E+04	*2.278E+11	*2.278E+11
Tc-99	5.548E+03	5.608E+03	5.733E+03	6.193E+03	7.759E+03	1.847E+04	*1.697E+10	*1.697E+10
U-234	2.274E+04	2.289E+04	2.321E+04	2.434E+04	2.799E+04	4.768E+04	*6.247E+09	*6.247E+09
U-235	2.021E+02	2.031E+02	2.050E+02	2.118E+02	2.331E+02	3.399E+02	*2.161E+06	*2.161E+06
U-238	1.086E+03	1.092E+03	1.103E+03	1.143E+03	1.269E+03	1.927E+03	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	1.209E-02	2.067E+03	1.209E-02	2.067E+03
Np-237	1.000E+00	0.000E+00	2.027E-01	1.233E+02	2.027E-01	1.233E+02
Pu-239	1.000E+00	0.000E+00	4.433E-03	5.640E+03	4.433E-03	5.640E+03
Pu-240	1.000E+00	0.000E+00	4.412E-03	5.666E+03	4.412E-03	5.666E+03
Tc-99	1.000E+00	0.000E+00	4.507E-03	5.548E+03	4.507E-03	5.548E+03
U-234	1.000E+00	0.000E+00	1.099E-03	2.274E+04	1.099E-03	2.274E+04
U-235	1.000E+00	0.000E+00	1.237E-01	2.021E+02	1.237E-01	2.021E+02
U-238	1.000E+00	0.000E+00	2.302E-02	1.086E+03	2.302E-02	1.086E+03

Summary : Hematite - Surface CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.209E-02	1.205E-02	1.198E-02	1.171E-02	1.096E-02	8.590E-03	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	3.268E-08	9.704E-08	2.192E-07	5.836E-07	1.219E-06	1.443E-06	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	2.027E-01	1.964E-01	1.845E-01	1.481E-01	7.886E-02	8.258E-03	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		2.027E-01	1.964E-01	1.845E-01	1.481E-01	7.886E-02	8.259E-03	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	3.330E-16	2.176E-15	1.088E-14	8.660E-14	5.453E-13	2.242E-12	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	2.974E-09	8.386E-09	1.855E-08	4.825E-08	9.603E-08	9.369E-08	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		2.974E-09	8.386E-09	1.855E-08	4.825E-08	9.603E-08	9.369E-08	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	1.404E-18	2.084E-17	2.382E-16	5.878E-15	1.174E-13	2.117E-12	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	1.731E-11	1.197E-10	6.171E-10	5.059E-09	3.349E-08	1.655E-07	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		1.731E-11	1.197E-10	6.171E-10	5.059E-09	3.349E-08	1.655E-07	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	4.433E-03	4.412E-03	4.371E-03	4.229E-03	3.829E-03	2.501E-03	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	6.089E-11	1.821E-10	4.221E-10	1.235E-09	3.336E-09	8.163E-09	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	1.237E-01	1.231E-01	1.220E-01	1.180E-01	1.071E-01	7.313E-02	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		1.237E-01	1.231E-01	1.220E-01	1.180E-01	1.071E-01	7.313E-02	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	2.502E-16	1.772E-15	9.345E-15	8.124E-14	6.231E-13	4.547E-12	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	7.701E-07	2.326E-06	5.393E-06	1.566E-05	4.105E-05	8.876E-05	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		7.701E-07	2.326E-06	5.393E-06	1.566E-05	4.105E-05	8.876E-05	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	9.732E-18	1.435E-16	1.632E-15	3.998E-14	7.881E-13	1.380E-11	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	3.934E-08	2.703E-07	1.386E-06	1.125E-05	7.268E-05	3.381E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		3.934E-08	2.703E-07	1.386E-06	1.125E-05	7.268E-05	3.381E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	2.184E-10	2.174E-10	2.153E-10	2.082E-10	1.882E-10	1.223E-10	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	4.412E-03	4.391E-03	4.350E-03	4.206E-03	3.802E-03	2.470E-03	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		4.412E-03	4.391E-03	4.350E-03	4.206E-03	3.802E-03	2.470E-03	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	1.479E-11	4.459E-11	1.032E-10	2.977E-10	7.667E-10	1.539E-09	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	2.155E-21	1.479E-20	7.683E-20	6.598E-19	4.973E-18	3.390E-17	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	6.090E-21	8.907E-20	9.782E-19	2.106E-17	3.123E-16	3.441E-15	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	6.340E-22	1.804E-20	3.816E-19	1.705E-17	3.770E-16	4.805E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	4.507E-03	4.458E-03	4.361E-03	4.037E-03	3.222E-03	1.353E-03	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.099E-03	1.092E-03	1.077E-03	1.026E-03	8.903E-04	5.041E-04	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	1.557E-09	4.642E-09	1.069E-08	3.055E-08	7.698E-08	1.436E-07	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		1.099E-03	1.092E-03	1.077E-03	1.026E-03	8.904E-04	5.042E-04	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	8.707E-09	2.572E-08	5.920E-08	1.709E-07	4.447E-07	9.369E-07	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	8.302E-15	5.697E-14	2.959E-13	2.534E-12	1.894E-11	1.268E-10	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		8.707E-09	2.572E-08	5.920E-08	1.709E-07	4.447E-07	9.370E-07	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM - AF 30 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr								
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	9.874E-10	6.898E-09	3.622E-08	3.158E-07	2.464E-06	1.918E-05	0.000E+00	0.000E+00	
Ra-226	U-238	9.999E-01	6.990E-16	1.046E-14	1.212E-13	3.123E-12	7.005E-11	1.740E-09	0.000E+00	0.000E+00	
Ra-226	ΣDOSE(j)		9.874E-10	6.898E-09	3.622E-08	3.158E-07	2.464E-06	1.919E-05	0.000E+00	0.000E+00	
Pb-210	U-234	1.000E+00	1.719E-13	1.817E-12	1.623E-11	3.321E-10	5.939E-09	8.872E-08	0.000E+00	0.000E+00	
Pb-210	U-238	9.999E-01	1.090E-19	2.362E-18	4.430E-17	2.587E-15	1.341E-13	6.825E-12	0.000E+00	0.000E+00	
Pb-210	ΣDOSE(j)		1.719E-13	1.817E-12	1.623E-11	3.321E-10	5.939E-09	8.872E-08	0.000E+00	0.000E+00	
U-238	U-238	5.400E-05	5.097E-08	5.062E-08	4.993E-08	4.753E-08	4.112E-08	2.298E-08	0.000E+00	0.000E+00	
U-238	U-238	9.999E-01	2.302E-02	2.290E-02	2.267E-02	2.188E-02	1.970E-02	1.297E-02	0.000E+00	0.000E+00	
U-238	ΣDOSE(j)		2.302E-02	2.290E-02	2.267E-02	2.188E-02	1.970E-02	1.297E-02	0.000E+00	0.000E+00	

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.68 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Surface CSM - AF 300 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Surface CSM - AF 300 m^2

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	300.00 square meters	Am-241	1.000E+00
Thickness:	0.15 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	9.041E-01	8.852E-01	8.489E-01	7.371E-01	5.157E-01	2.276E-01	0.000E+00	0.000E+00
M(t):	3.617E-02	3.541E-02	3.396E-02	2.948E-02	2.063E-02	9.105E-03	0.000E+00	0.000E+00

Maximum TDOSE(t): 9.041E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.759E-03	0.0108	2.253E-03	0.0025	0.000E+00	0.0000	1.207E-02	0.0134	8.000E-05	0.0001	1.146E-05	0.0000	1.546E-02	0.0171
Np-237	2.326E-01	0.2573	2.703E-03	0.0030	0.000E+00	0.0000	2.909E-01	0.3218	2.092E-03	0.0023	7.335E-05	0.0001	1.861E-02	0.0206
Pu-239	6.525E-05	0.0001	2.178E-03	0.0024	0.000E+00	0.0000	1.175E-02	0.0130	1.557E-04	0.0002	5.518E-06	0.0000	1.504E-02	0.0166
Pu-240	3.483E-05	0.0000	2.178E-03	0.0024	0.000E+00	0.0000	1.175E-02	0.0130	1.557E-04	0.0002	5.517E-06	0.0000	1.504E-02	0.0166
Tc-99	2.832E-05	0.0000	4.210E-08	0.0000	0.000E+00	0.0000	4.477E-02	0.0495	2.666E-06	0.0000	7.294E-05	0.0001	6.184E-06	0.0000
U-234	9.122E-05	0.0001	6.693E-04	0.0007	0.000E+00	0.0000	3.470E-03	0.0038	1.636E-04	0.0002	2.694E-04	0.0003	1.201E-03	0.0013
U-235	1.665E-01	0.1841	6.237E-04	0.0007	0.000E+00	0.0000	3.282E-03	0.0036	1.545E-04	0.0002	2.545E-04	0.0003	1.135E-03	0.0013
U-238	3.098E-02	0.0343	5.985E-04	0.0007	0.000E+00	0.0000	3.295E-03	0.0036	1.553E-04	0.0002	2.558E-04	0.0003	1.140E-03	0.0013
Total	4.401E-01	0.4867	1.120E-02	0.0124	0.000E+00	0.0000	3.813E-01	0.4218	2.960E-03	0.0033	9.485E-04	0.0010	6.764E-02	0.0748

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.963E-02	0.0438
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.470E-01	0.6050
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.919E-02	0.0323
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.916E-02	0.0323
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.488E-02	0.0496
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.865E-03	0.0065
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.719E-01	0.1902
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.643E-02	0.0403
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.041E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.744E-03	0.0110	2.240E-03	0.0025	0.000E+00	0.0000	1.200E-02	0.0136	7.954E-05	0.0001	1.139E-05	0.0000	1.537E-02	0.0174
Np-237	2.257E-01	0.2550	2.614E-03	0.0030	0.000E+00	0.0000	2.815E-01	0.3180	2.024E-03	0.0023	7.096E-05	0.0001	1.801E-02	0.0203
Pu-239	6.516E-05	0.0001	2.168E-03	0.0024	0.000E+00	0.0000	1.169E-02	0.0132	1.550E-04	0.0002	5.492E-06	0.0000	1.497E-02	0.0169
Pu-240	3.480E-05	0.0000	2.167E-03	0.0024	0.000E+00	0.0000	1.169E-02	0.0132	1.549E-04	0.0002	5.491E-06	0.0000	1.497E-02	0.0169
Tc-99	2.811E-05	0.0000	4.164E-08	0.0000	0.000E+00	0.0000	4.428E-02	0.0500	2.638E-06	0.0000	7.215E-05	0.0001	6.117E-06	0.0000
U-234	9.094E-05	0.0001	6.646E-04	0.0008	0.000E+00	0.0000	3.446E-03	0.0039	1.624E-04	0.0002	2.675E-04	0.0003	1.193E-03	0.0013
U-235	1.659E-01	0.1874	6.195E-04	0.0007	0.000E+00	0.0000	3.267E-03	0.0037	1.534E-04	0.0002	2.527E-04	0.0003	1.128E-03	0.0013
U-238	3.085E-02	0.0349	5.943E-04	0.0007	0.000E+00	0.0000	3.272E-03	0.0037	1.542E-04	0.0002	2.540E-04	0.0003	1.132E-03	0.0013
Total	4.324E-01	0.4885	1.107E-02	0.0125	0.000E+00	0.0000	3.711E-01	0.4193	2.887E-03	0.0033	9.398E-04	0.0011	6.678E-02	0.0754

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.945E-02	0.0446
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.299E-01	0.5986
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.906E-02	0.0328
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-02	0.0328
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.439E-02	0.0502
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.825E-03	0.0066
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.713E-01	0.1935
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.626E-02	0.0410
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.852E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.714E-03	0.0114	2.214E-03	0.0026	0.000E+00	0.0000	1.187E-02	0.0140	7.864E-05	0.0001	1.126E-05	0.0000	1.519E-02	0.0179
Np-237	2.125E-01	0.2504	2.446E-03	0.0029	0.000E+00	0.0000	2.634E-01	0.3103	1.894E-03	0.0022	6.640E-05	0.0001	1.685E-02	0.0198
Pu-239	6.499E-05	0.0001	2.147E-03	0.0025	0.000E+00	0.0000	1.158E-02	0.0136	1.535E-04	0.0002	5.441E-06	0.0000	1.483E-02	0.0175
Pu-240	3.474E-05	0.0000	2.147E-03	0.0025	0.000E+00	0.0000	1.158E-02	0.0136	1.535E-04	0.0002	5.439E-06	0.0000	1.483E-02	0.0175
Tc-99	2.771E-05	0.0000	4.074E-08	0.0000	0.000E+00	0.0000	4.332E-02	0.0510	2.580E-06	0.0000	7.059E-05	0.0001	5.984E-06	0.0000
U-234	9.040E-05	0.0001	6.554E-04	0.0008	0.000E+00	0.0000	3.398E-03	0.0040	1.602E-04	0.0002	2.638E-04	0.0003	1.176E-03	0.0014
U-235	1.647E-01	0.1940	6.113E-04	0.0007	0.000E+00	0.0000	3.236E-03	0.0038	1.513E-04	0.0002	2.492E-04	0.0003	1.114E-03	0.0013
U-238	3.060E-02	0.0360	5.860E-04	0.0007	0.000E+00	0.0000	3.227E-03	0.0038	1.521E-04	0.0002	2.505E-04	0.0003	1.117E-03	0.0013
Total	4.177E-01	0.4921	1.081E-02	0.0127	0.000E+00	0.0000	3.516E-01	0.4142	2.746E-03	0.0032	9.226E-04	0.0011	6.512E-02	0.0767

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.908E-02	0.0460
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.972E-01	0.5857
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.879E-02	0.0339
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.875E-02	0.0339
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.343E-02	0.0512
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.744E-03	0.0068
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.700E-01	0.2003
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.593E-02	0.0423
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.489E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.608E-03	0.0130	2.126E-03	0.0029	0.000E+00	0.0000	1.140E-02	0.0155	7.551E-05	0.0001	1.081E-05	0.0000	1.459E-02	0.0198
Np-237	1.721E-01	0.2335	1.938E-03	0.0026	0.000E+00	0.0000	2.086E-01	0.2831	1.501E-03	0.0020	5.260E-05	0.0001	1.335E-02	0.0181
Pu-239	6.440E-05	0.0001	2.077E-03	0.0028	0.000E+00	0.0000	1.121E-02	0.0152	1.485E-04	0.0002	5.262E-06	0.0000	1.435E-02	0.0195
Pu-240	3.455E-05	0.0000	2.075E-03	0.0028	0.000E+00	0.0000	1.120E-02	0.0152	1.484E-04	0.0002	5.258E-06	0.0000	1.433E-02	0.0194
Tc-99	2.634E-05	0.0000	3.771E-08	0.0000	0.000E+00	0.0000	4.010E-02	0.0544	2.389E-06	0.0000	6.534E-05	0.0001	5.539E-06	0.0000
U-234	8.879E-05	0.0001	6.237E-04	0.0008	0.000E+00	0.0000	3.233E-03	0.0044	1.524E-04	0.0002	2.510E-04	0.0003	1.119E-03	0.0015
U-235	1.604E-01	0.2176	5.835E-04	0.0008	0.000E+00	0.0000	3.130E-03	0.0042	1.440E-04	0.0002	2.371E-04	0.0003	1.068E-03	0.0014
U-238	2.971E-02	0.0403	5.576E-04	0.0008	0.000E+00	0.0000	3.070E-03	0.0042	1.447E-04	0.0002	2.383E-04	0.0003	1.062E-03	0.0014
Total	3.721E-01	0.5048	9.981E-03	0.0135	0.000E+00	0.0000	2.920E-01	0.3961	2.316E-03	0.0031	8.657E-04	0.0012	5.987E-02	0.0812

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.781E-02	0.0513
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.976E-01	0.5394
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.785E-02	0.0378
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.779E-02	0.0377
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.020E-02	0.0545
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.468E-03	0.0074
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.656E-01	0.2246
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.478E-02	0.0472
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.371E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.309E-03	0.0181	1.884E-03	0.0037	0.000E+00	0.0000	1.010E-02	0.0196	6.691E-05	0.0001	9.580E-06	0.0000	1.293E-02	0.0251
Np-237	9.405E-02	0.1824	9.910E-04	0.0019	0.000E+00	0.0000	1.067E-01	0.2069	7.674E-04	0.0015	2.692E-05	0.0001	6.826E-03	0.0132
Pu-239	6.262E-05	0.0001	1.879E-03	0.0036	0.000E+00	0.0000	1.014E-02	0.0197	1.344E-04	0.0003	4.762E-06	0.0000	1.298E-02	0.0252
Pu-240	3.401E-05	0.0001	1.875E-03	0.0036	0.000E+00	0.0000	1.011E-02	0.0196	1.340E-04	0.0003	4.751E-06	0.0000	1.295E-02	0.0251
Tc-99	2.276E-05	0.0000	3.009E-08	0.0000	0.000E+00	0.0000	3.200E-02	0.0620	1.906E-06	0.0000	5.213E-05	0.0001	4.419E-06	0.0000
U-234	8.635E-05	0.0002	5.387E-04	0.0010	0.000E+00	0.0000	2.792E-03	0.0054	1.316E-04	0.0003	2.167E-04	0.0004	9.665E-04	0.0019
U-235	1.487E-01	0.2883	5.118E-04	0.0010	0.000E+00	0.0000	2.836E-03	0.0055	1.243E-04	0.0002	2.048E-04	0.0004	9.492E-04	0.0018
U-238	2.723E-02	0.0528	4.814E-04	0.0009	0.000E+00	0.0000	2.651E-03	0.0051	1.249E-04	0.0002	2.058E-04	0.0004	9.173E-04	0.0018
Total	2.795E-01	0.5420	8.161E-03	0.0158	0.000E+00	0.0000	1.773E-01	0.3439	1.485E-03	0.0029	7.254E-04	0.0014	4.852E-02	0.0941

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.429E-02	0.0665
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.094E-01	0.4060
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.520E-02	0.0489
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.511E-02	0.0487
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.208E-02	0.0622
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.732E-03	0.0092
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.533E-01	0.2973
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.161E-02	0.0613
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.157E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.290E-03	0.0364	1.140E-03	0.0050	0.000E+00	0.0000	6.111E-03	0.0268	4.049E-05	0.0002	5.796E-06	0.0000	7.821E-03	0.0344
Np-237	1.085E-02	0.0477	8.764E-05	0.0004	0.000E+00	0.0000	9.431E-03	0.0414	6.784E-05	0.0003	2.396E-06	0.0000	6.034E-04	0.0027
Pu-239	5.489E-05	0.0002	1.224E-03	0.0054	0.000E+00	0.0000	6.603E-03	0.0290	8.750E-05	0.0004	3.101E-06	0.0000	8.452E-03	0.0371
Pu-240	3.200E-05	0.0001	1.214E-03	0.0053	0.000E+00	0.0000	6.551E-03	0.0288	8.683E-05	0.0004	3.077E-06	0.0000	8.387E-03	0.0368
Tc-99	1.344E-05	0.0001	1.262E-08	0.0000	0.000E+00	0.0000	1.342E-02	0.0589	7.995E-07	0.0000	2.187E-05	0.0001	1.853E-06	0.0000
U-234	9.457E-05	0.0004	2.981E-04	0.0013	0.000E+00	0.0000	1.547E-03	0.0068	7.272E-05	0.0003	1.198E-04	0.0005	5.350E-04	0.0024
U-235	1.098E-01	0.4823	3.103E-04	0.0014	0.000E+00	0.0000	1.874E-03	0.0082	6.881E-05	0.0003	1.132E-04	0.0005	6.009E-04	0.0026
U-238	1.918E-02	0.0843	2.661E-04	0.0012	0.000E+00	0.0000	1.465E-03	0.0064	6.905E-05	0.0003	1.137E-04	0.0005	5.070E-04	0.0022
Total	1.483E-01	0.6515	4.540E-03	0.0199	0.000E+00	0.0000	4.700E-02	0.2065	4.940E-04	0.0022	3.830E-04	0.0017	2.691E-02	0.1182

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.341E-02	0.1028
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.104E-02	0.0924
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.642E-02	0.0722
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.627E-02	0.0715
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-02	0.0591
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.667E-03	0.0117
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.128E-01	0.4953
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.160E-02	0.0949
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.276E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.963E-02	3.945E-02	3.908E-02	3.780E-02	3.429E-02	2.340E-02	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	8.618E-08	2.596E-07	5.884E-07	1.564E-06	3.235E-06	3.676E-06	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	1.785E-15	1.107E-14	5.390E-14	4.218E-13	2.626E-12	1.048E-11	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	2.117E-18	3.118E-17	3.556E-16	8.796E-15	1.780E-13	3.372E-12	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		3.963E-02	3.945E-02	3.908E-02	3.781E-02	3.429E-02	2.341E-02	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	5.470E-01	5.299E-01	4.972E-01	3.976E-01	2.094E-01	2.104E-02	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	1.546E-08	4.174E-08	9.087E-08	2.340E-07	4.618E-07	4.377E-07	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	2.598E-11	1.787E-10	9.203E-10	7.569E-09	5.074E-08	2.637E-07	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		5.470E-01	5.299E-01	4.972E-01	3.976E-01	2.094E-01	2.104E-02	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	2.919E-02	2.906E-02	2.879E-02	2.785E-02	2.520E-02	1.642E-02	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	8.460E-11	2.534E-10	5.882E-10	1.732E-09	4.763E-09	1.247E-08	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	1.470E-15	1.052E-14	5.567E-14	4.832E-13	3.665E-12	2.543E-11	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	1.724E-17	2.454E-16	2.739E-15	6.651E-14	1.316E-12	2.374E-11	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		2.919E-02	2.906E-02	2.879E-02	2.785E-02	2.520E-02	1.642E-02	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	1.444E-09	1.437E-09	1.423E-09	1.376E-09	1.243E-09	8.056E-10	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	2.916E-02	2.902E-02	2.875E-02	2.779E-02	2.511E-02	1.627E-02	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	7.951E-11	2.418E-10	5.612E-10	1.620E-09	4.165E-09	8.265E-09	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	7.694E-21	5.130E-20	2.629E-19	2.241E-18	1.684E-17	1.145E-16	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	1.068E-20	1.582E-19	1.749E-18	3.787E-17	5.663E-16	6.427E-15	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	9.393E-22	2.660E-20	5.615E-19	2.517E-17	5.653E-16	7.661E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		2.916E-02	2.902E-02	2.875E-02	2.779E-02	2.511E-02	1.627E-02	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	4.488E-02	4.439E-02	4.343E-02	4.020E-02	3.208E-02	1.346E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	5.865E-03	5.824E-03	5.744E-03	5.467E-03	4.726E-03	2.630E-03	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	2.884E-08	8.330E-08	1.902E-07	5.463E-07	1.415E-06	2.922E-06	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	1.593E-09	1.120E-08	5.901E-08	5.172E-07	4.083E-06	3.324E-05	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	1.672E-12	1.746E-11	1.542E-10	3.121E-09	5.536E-08	8.087E-07	0.000E+00	0.000E+00
U-234	ΣDSR (j)		5.865E-03	5.825E-03	5.744E-03	5.468E-03	4.732E-03	2.667E-03	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	1.719E-01	1.713E-01	1.700E-01	1.655E-01	1.529E-01	1.117E-01	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	4.557E-06	1.386E-05	3.218E-05	9.317E-05	2.415E-04	4.963E-04	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	6.862E-08	4.572E-07	2.314E-06	1.867E-05	1.213E-04	5.818E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		1.719E-01	1.713E-01	1.700E-01	1.656E-01	1.533E-01	1.128E-01	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	2.820E-07	2.800E-07	2.761E-07	2.628E-07	2.270E-07	1.257E-07	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	3.643E-02	3.626E-02	3.593E-02	3.478E-02	3.161E-02	2.160E-02	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	8.303E-09	2.476E-08	5.698E-08	1.627E-07	4.087E-07	7.494E-07	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	2.803E-14	1.866E-13	9.559E-13	8.116E-12	6.029E-11	3.957E-10	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	1.124E-15	1.695E-14	1.973E-13	5.113E-12	1.160E-10	3.016E-09	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	1.063E-18	2.279E-17	4.225E-16	2.436E-14	1.251E-12	6.224E-11	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		3.643E-02	3.626E-02	3.593E-02	3.478E-02	3.161E-02	2.160E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		6.308E+02	6.337E+02	6.397E+02	6.613E+02	7.290E+02	1.068E+03	*3.431E+12	*3.431E+12
Np-237		4.570E+01	4.718E+01	5.028E+01	6.287E+01	1.194E+02	1.188E+03	*7.047E+08	*7.047E+08
Pu-239		8.564E+02	8.603E+02	8.684E+02	8.978E+02	9.921E+02	1.522E+03	*6.214E+10	*6.214E+10
Pu-240		8.573E+02	8.613E+02	8.696E+02	8.995E+02	9.955E+02	1.536E+03	*2.278E+11	*2.278E+11
Tc-99		5.570E+02	5.631E+02	5.756E+02	6.219E+02	7.794E+02	1.858E+03	*1.697E+10	*1.697E+10
U-234		4.263E+03	4.292E+03	4.352E+03	4.572E+03	5.283E+03	9.374E+03	*6.247E+09	*6.247E+09
U-235		1.454E+02	1.459E+02	1.470E+02	1.510E+02	1.631E+02	2.217E+02	*2.161E+06	*2.161E+06
U-238		6.863E+02	6.894E+02	6.958E+02	7.188E+02	7.908E+02	1.157E+03	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	3.963E-02	6.308E+02	3.963E-02	6.308E+02
Np-237	1.000E+00	0.000E+00	5.470E-01	4.570E+01	5.470E-01	4.570E+01
Pu-239	1.000E+00	0.000E+00	2.919E-02	8.564E+02	2.919E-02	8.564E+02
Pu-240	1.000E+00	0.000E+00	2.916E-02	8.573E+02	2.916E-02	8.573E+02
Tc-99	1.000E+00	0.000E+00	4.488E-02	5.570E+02	4.488E-02	5.570E+02
U-234	1.000E+00	0.000E+00	5.865E-03	4.263E+03	5.865E-03	4.263E+03
U-235	1.000E+00	0.000E+00	1.719E-01	1.454E+02	1.719E-01	1.454E+02
U-238	1.000E+00	0.000E+00	3.643E-02	6.863E+02	3.643E-02	6.863E+02

Summary : Hematite - Surface CSM - AF 300 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.963E-02	3.945E-02	3.908E-02	3.780E-02	3.429E-02	2.340E-02	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	8.618E-08	2.596E-07	5.884E-07	1.564E-06	3.235E-06	3.676E-06	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	5.470E-01	5.299E-01	4.972E-01	3.976E-01	2.094E-01	2.104E-02	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		5.470E-01	5.299E-01	4.972E-01	3.976E-01	2.094E-01	2.104E-02	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	1.785E-15	1.107E-14	5.390E-14	4.218E-13	2.626E-12	1.048E-11	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	1.546E-08	4.174E-08	9.087E-08	2.340E-07	4.618E-07	4.377E-07	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		1.546E-08	4.174E-08	9.087E-08	2.340E-07	4.618E-07	4.377E-07	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	2.117E-18	3.118E-17	3.556E-16	8.796E-15	1.780E-13	3.372E-12	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	2.598E-11	1.787E-10	9.203E-10	7.569E-09	5.074E-08	2.637E-07	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		2.598E-11	1.787E-10	9.203E-10	7.569E-09	5.074E-08	2.637E-07	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	2.919E-02	2.906E-02	2.879E-02	2.785E-02	2.520E-02	1.642E-02	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	8.460E-11	2.534E-10	5.882E-10	1.732E-09	4.763E-09	1.247E-08	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	1.719E-01	1.713E-01	1.700E-01	1.655E-01	1.529E-01	1.117E-01	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		1.719E-01	1.713E-01	1.700E-01	1.655E-01	1.529E-01	1.117E-01	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	1.470E-15	1.052E-14	5.567E-14	4.832E-13	3.665E-12	2.543E-11	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	4.557E-06	1.386E-05	3.218E-05	9.317E-05	2.415E-04	4.963E-04	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		4.557E-06	1.386E-05	3.218E-05	9.317E-05	2.415E-04	4.963E-04	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	1.724E-17	2.454E-16	2.739E-15	6.651E-14	1.316E-12	2.374E-11	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	6.862E-08	4.572E-07	2.314E-06	1.867E-05	1.213E-04	5.818E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		6.862E-08	4.572E-07	2.314E-06	1.867E-05	1.213E-04	5.818E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	1.444E-09	1.437E-09	1.423E-09	1.376E-09	1.243E-09	8.056E-10	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	2.916E-02	2.902E-02	2.875E-02	2.779E-02	2.511E-02	1.627E-02	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		2.916E-02	2.902E-02	2.875E-02	2.779E-02	2.511E-02	1.627E-02	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	7.951E-11	2.418E-10	5.612E-10	1.620E-09	4.165E-09	8.265E-09	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	7.694E-21	5.130E-20	2.629E-19	2.241E-18	1.684E-17	1.145E-16	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	1.068E-20	1.582E-19	1.749E-18	3.787E-17	5.663E-16	6.427E-15	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	9.393E-22	2.660E-20	5.615E-19	2.517E-17	5.653E-16	7.661E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	4.488E-02	4.439E-02	4.343E-02	4.020E-02	3.208E-02	1.346E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	5.865E-03	5.824E-03	5.744E-03	5.467E-03	4.726E-03	2.630E-03	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	8.303E-09	2.476E-08	5.698E-08	1.627E-07	4.087E-07	7.494E-07	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		5.865E-03	5.824E-03	5.744E-03	5.468E-03	4.727E-03	2.631E-03	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	2.884E-08	8.330E-08	1.902E-07	5.463E-07	1.415E-06	2.922E-06	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	2.803E-14	1.866E-13	9.559E-13	8.116E-12	6.029E-11	3.957E-10	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		2.884E-08	8.330E-08	1.902E-07	5.463E-07	1.415E-06	2.923E-06	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.593E-09	1.120E-08	5.901E-08	5.172E-07	4.083E-06	3.324E-05	0.000E+00	0.000E+00
Ra-226	U-238	9.999E-01	1.124E-15	1.695E-14	1.973E-13	5.113E-12	1.160E-10	3.016E-09	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)		1.593E-09	1.120E-08	5.901E-08	5.172E-07	4.083E-06	3.324E-05	0.000E+00	0.000E+00
Pb-210	U-234	1.000E+00	1.672E-12	1.746E-11	1.542E-10	3.121E-09	5.536E-08	8.087E-07	0.000E+00	0.000E+00
Pb-210	U-238	9.999E-01	1.063E-18	2.279E-17	4.225E-16	2.436E-14	1.251E-12	6.224E-11	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		1.672E-12	1.746E-11	1.542E-10	3.121E-09	5.536E-08	8.088E-07	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	2.820E-07	2.800E-07	2.761E-07	2.628E-07	2.270E-07	1.257E-07	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	3.643E-02	3.626E-02	3.593E-02	3.478E-02	3.161E-02	2.160E-02	0.000E+00	0.000E+00
U-238	ΣDOSE(j)		3.643E-02	3.626E-02	3.593E-02	3.478E-02	3.161E-02	2.160E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM - AF 300 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Summary : Hematite - Surface CSM - AF 300 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.86 seconds

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Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Surface CSM - AF 3,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Surface CSM - AF 3,000 m²

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Attachment 4 to HEM-11-91

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.758E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.917E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.130E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.926E-03	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.915E-04	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.087E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.988E-03	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Surface CSM - AF 3,000 m²

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Surface CSM - AF 3,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Surface CSM - AF 3,000 m²

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3000.00 square meters	Am-241	1.000E+00
Thickness:	0.15 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.022E+00	1.977E+00	1.888E+00	1.618E+00	1.088E+00	4.247E-01	0.000E+00	0.000E+00
M(t):	8.090E-02	7.906E-02	7.554E-02	6.472E-02	4.352E-02	1.699E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 2.022E+00 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.036E-02	0.0051	2.893E-03	0.0014	0.000E+00	0.0000	4.025E-02	0.0199	8.000E-04	0.0004	1.146E-04	0.0001	5.153E-02	0.0255
Np-237	2.501E-01	0.1237	3.470E-03	0.0017	0.000E+00	0.0000	9.698E-01	0.4795	2.092E-02	0.0103	7.335E-04	0.0004	6.205E-02	0.0307
Pu-239	6.965E-05	0.0000	2.796E-03	0.0014	0.000E+00	0.0000	3.916E-02	0.0194	1.557E-03	0.0008	5.518E-05	0.0000	5.014E-02	0.0248
Pu-240	3.614E-05	0.0000	2.796E-03	0.0014	0.000E+00	0.0000	3.916E-02	0.0194	1.557E-03	0.0008	5.517E-05	0.0000	5.014E-02	0.0248
Tc-99	3.011E-05	0.0000	5.406E-08	0.0000	0.000E+00	0.0000	1.492E-01	0.0738	2.666E-05	0.0000	7.294E-04	0.0004	2.061E-05	0.0000
U-234	9.647E-05	0.0000	8.594E-04	0.0004	0.000E+00	0.0000	1.157E-02	0.0057	1.636E-03	0.0008	2.694E-03	0.0013	4.003E-03	0.0020
U-235	1.781E-01	0.0881	8.009E-04	0.0004	0.000E+00	0.0000	1.094E-02	0.0054	1.545E-03	0.0008	2.545E-03	0.0013	3.784E-03	0.0019
U-238	3.362E-02	0.0166	7.685E-04	0.0004	0.000E+00	0.0000	1.098E-02	0.0054	1.553E-03	0.0008	2.558E-03	0.0013	3.801E-03	0.0019
Total	4.724E-01	0.2336	1.438E-02	0.0071	0.000E+00	0.0000	1.271E+00	0.6285	2.960E-02	0.0146	9.485E-03	0.0047	2.255E-01	0.1115

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.059E-01	0.0524
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.307E+00	0.6463
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.378E-02	0.0464
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.374E-02	0.0463
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.500E-01	0.0742
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.086E-02	0.0103
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.977E-01	0.0978
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.328E-02	0.0263
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.022E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.034E-02	0.0052	2.876E-03	0.0015	0.000E+00	0.0000	4.002E-02	0.0202	7.954E-04	0.0004	1.139E-04	0.0001	5.123E-02	0.0259
Np-237	2.428E-01	0.1228	3.357E-03	0.0017	0.000E+00	0.0000	9.383E-01	0.4747	2.024E-02	0.0102	7.096E-04	0.0004	6.002E-02	0.0304
Pu-239	6.958E-05	0.0000	2.783E-03	0.0014	0.000E+00	0.0000	3.898E-02	0.0197	1.550E-03	0.0008	5.492E-05	0.0000	4.990E-02	0.0252
Pu-240	3.611E-05	0.0000	2.783E-03	0.0014	0.000E+00	0.0000	3.898E-02	0.0197	1.549E-03	0.0008	5.491E-05	0.0000	4.990E-02	0.0252
Tc-99	2.990E-05	0.0000	5.347E-08	0.0000	0.000E+00	0.0000	1.476E-01	0.0747	2.638E-05	0.0000	7.215E-04	0.0004	2.039E-05	0.0000
U-234	9.618E-05	0.0000	8.534E-04	0.0004	0.000E+00	0.0000	1.149E-02	0.0058	1.624E-03	0.0008	2.675E-03	0.0014	3.976E-03	0.0020
U-235	1.775E-01	0.0898	7.955E-04	0.0004	0.000E+00	0.0000	1.089E-02	0.0055	1.534E-03	0.0008	2.527E-03	0.0013	3.761E-03	0.0019
U-238	3.349E-02	0.0169	7.631E-04	0.0004	0.000E+00	0.0000	1.091E-02	0.0055	1.542E-03	0.0008	2.540E-03	0.0013	3.775E-03	0.0019
Total	4.644E-01	0.2349	1.421E-02	0.0072	0.000E+00	0.0000	1.237E+00	0.6259	2.887E-02	0.0146	9.398E-03	0.0048	2.226E-01	0.1126

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.054E-01	0.0533
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.265E+00	0.6402
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.334E-02	0.0472
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.330E-02	0.0472
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.484E-01	0.0751
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.071E-02	0.0105
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.970E-01	0.0997
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.302E-02	0.0268
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.977E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.031E-02	0.0055	2.843E-03	0.0015	0.000E+00	0.0000	3.956E-02	0.0210	7.864E-04	0.0004	1.126E-04	0.0001	5.065E-02	0.0268
Np-237	2.288E-01	0.1211	3.141E-03	0.0017	0.000E+00	0.0000	8.780E-01	0.4649	1.894E-02	0.0100	6.640E-04	0.0004	5.616E-02	0.0297
Pu-239	6.943E-05	0.0000	2.757E-03	0.0015	0.000E+00	0.0000	3.862E-02	0.0204	1.535E-03	0.0008	5.441E-05	0.0000	4.944E-02	0.0262
Pu-240	3.606E-05	0.0000	2.757E-03	0.0015	0.000E+00	0.0000	3.861E-02	0.0204	1.535E-03	0.0008	5.439E-05	0.0000	4.943E-02	0.0262
Tc-99	2.949E-05	0.0000	5.231E-08	0.0000	0.000E+00	0.0000	1.444E-01	0.0765	2.580E-05	0.0000	7.059E-04	0.0004	1.995E-05	0.0000
U-234	9.565E-05	0.0001	8.415E-04	0.0004	0.000E+00	0.0000	1.133E-02	0.0060	1.602E-03	0.0008	2.638E-03	0.0014	3.920E-03	0.0021
U-235	1.763E-01	0.0934	7.849E-04	0.0004	0.000E+00	0.0000	1.079E-02	0.0057	1.513E-03	0.0008	2.492E-03	0.0013	3.715E-03	0.0020
U-238	3.323E-02	0.0176	7.525E-04	0.0004	0.000E+00	0.0000	1.076E-02	0.0057	1.521E-03	0.0008	2.505E-03	0.0013	3.722E-03	0.0020
Total	4.488E-01	0.2377	1.388E-02	0.0073	0.000E+00	0.0000	1.172E+00	0.6206	2.746E-02	0.0145	9.226E-03	0.0049	2.171E-01	0.1149

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.043E-01	0.0552
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.186E+00	0.6278
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.247E-02	0.0490
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.242E-02	0.0489
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.452E-01	0.0769
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-02	0.0108
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.956E-01	0.1036
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.249E-02	0.0278
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.888E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.020E-02	0.0063	2.730E-03	0.0017	0.000E+00	0.0000	3.799E-02	0.0235	7.551E-04	0.0005	1.081E-04	0.0001	4.863E-02	0.0301
Np-237	1.857E-01	0.1148	2.488E-03	0.0015	0.000E+00	0.0000	6.955E-01	0.4298	1.501E-02	0.0093	5.260E-04	0.0003	4.449E-02	0.0275
Pu-239	6.892E-05	0.0000	2.667E-03	0.0016	0.000E+00	0.0000	3.735E-02	0.0231	1.485E-03	0.0009	5.263E-05	0.0000	4.782E-02	0.0296
Pu-240	3.588E-05	0.0000	2.665E-03	0.0016	0.000E+00	0.0000	3.732E-02	0.0231	1.484E-03	0.0009	5.258E-05	0.0000	4.778E-02	0.0295
Tc-99	2.808E-05	0.0000	4.842E-08	0.0000	0.000E+00	0.0000	1.337E-01	0.0826	2.389E-05	0.0000	6.534E-04	0.0004	1.846E-05	0.0000
U-234	9.409E-05	0.0001	8.008E-04	0.0005	0.000E+00	0.0000	1.078E-02	0.0067	1.524E-03	0.0009	2.510E-03	0.0016	3.730E-03	0.0023
U-235	1.721E-01	0.1064	7.492E-04	0.0005	0.000E+00	0.0000	1.043E-02	0.0064	1.440E-03	0.0009	2.371E-03	0.0015	3.562E-03	0.0022
U-238	3.234E-02	0.0200	7.160E-04	0.0004	0.000E+00	0.0000	1.023E-02	0.0063	1.447E-03	0.0009	2.383E-03	0.0015	3.542E-03	0.0022
Total	4.006E-01	0.2476	1.282E-02	0.0079	0.000E+00	0.0000	9.733E-01	0.6015	2.316E-02	0.0143	8.657E-03	0.0054	1.996E-01	0.1233

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.004E-01	0.0621
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.437E-01	0.5832
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.945E-02	0.0553
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.934E-02	0.0552
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.344E-01	0.0831
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E-02	0.0120
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.907E-01	0.1178
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.066E-02	0.0313
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.618E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.898E-03	0.0091	2.419E-03	0.0022	0.000E+00	0.0000	3.366E-02	0.0309	6.691E-04	0.0006	9.580E-05	0.0001	4.309E-02	0.0396
Np-237	1.021E-01	0.0938	1.273E-03	0.0012	0.000E+00	0.0000	3.557E-01	0.3269	7.674E-03	0.0071	2.692E-04	0.0002	2.275E-02	0.0209
Pu-239	6.737E-05	0.0001	2.413E-03	0.0022	0.000E+00	0.0000	3.380E-02	0.0311	1.344E-03	0.0012	4.762E-05	0.0000	4.327E-02	0.0398
Pu-240	3.535E-05	0.0000	2.407E-03	0.0022	0.000E+00	0.0000	3.372E-02	0.0310	1.340E-03	0.0012	4.751E-05	0.0000	4.317E-02	0.0397
Tc-99	2.440E-05	0.0000	3.863E-08	0.0000	0.000E+00	0.0000	1.067E-01	0.0980	1.906E-05	0.0000	5.213E-04	0.0005	1.473E-05	0.0000
U-234	9.199E-05	0.0001	6.917E-04	0.0006	0.000E+00	0.0000	9.308E-03	0.0086	1.316E-03	0.0012	2.167E-03	0.0020	3.222E-03	0.0030
U-235	1.605E-01	0.1475	6.572E-04	0.0006	0.000E+00	0.0000	9.455E-03	0.0087	1.243E-03	0.0011	2.048E-03	0.0019	3.164E-03	0.0029
U-238	2.984E-02	0.0274	6.182E-04	0.0006	0.000E+00	0.0000	8.836E-03	0.0081	1.249E-03	0.0011	2.058E-03	0.0019	3.058E-03	0.0028
Total	3.026E-01	0.2781	1.048E-02	0.0096	0.000E+00	0.0000	5.911E-01	0.5433	1.485E-02	0.0137	7.254E-03	0.0067	1.617E-01	0.1487

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.983E-02	0.0826
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.897E-01	0.4501
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.094E-02	0.0744
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.072E-02	0.0742
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.072E-01	0.0986
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.680E-02	0.0154
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.771E-01	0.1628
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.566E-02	0.0420
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.088E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.850E-03	0.0208	1.464E-03	0.0034	0.000E+00	0.0000	2.037E-02	0.0480	4.049E-04	0.0010	5.796E-05	0.0001	2.607E-02	0.0614
Np-237	1.204E-02	0.0283	1.125E-04	0.0003	0.000E+00	0.0000	3.144E-02	0.0740	6.784E-04	0.0016	2.396E-05	0.0001	2.011E-03	0.0047
Pu-239	6.014E-05	0.0001	1.571E-03	0.0037	0.000E+00	0.0000	2.201E-02	0.0518	8.750E-04	0.0021	3.101E-05	0.0001	2.817E-02	0.0663
Pu-240	3.340E-05	0.0001	1.559E-03	0.0037	0.000E+00	0.0000	2.184E-02	0.0514	8.683E-04	0.0020	3.077E-05	0.0001	2.796E-02	0.0658
Tc-99	1.467E-05	0.0000	1.620E-08	0.0000	0.000E+00	0.0000	4.473E-02	0.1053	7.995E-06	0.0000	2.187E-04	0.0005	6.177E-06	0.0000
U-234	1.036E-04	0.0002	3.828E-04	0.0009	0.000E+00	0.0000	5.157E-03	0.0121	7.272E-04	0.0017	1.198E-03	0.0028	1.783E-03	0.0042
U-235	1.211E-01	0.2852	3.984E-04	0.0009	0.000E+00	0.0000	6.246E-03	0.0147	6.881E-04	0.0016	1.132E-03	0.0027	2.003E-03	0.0047
U-238	2.151E-02	0.0507	3.416E-04	0.0008	0.000E+00	0.0000	4.884E-03	0.0115	6.905E-04	0.0016	1.137E-03	0.0027	1.690E-03	0.0040
Total	1.637E-01	0.3855	5.830E-03	0.0137	0.000E+00	0.0000	1.567E-01	0.3689	4.940E-03	0.0116	3.830E-03	0.0090	8.970E-02	0.2112

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.722E-02	0.1347
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.630E-02	0.1090
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.272E-02	0.1241
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.229E-02	0.1231
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.497E-02	0.1059
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.351E-03	0.0220
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.316E-01	0.3098
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.026E-02	0.0712
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.247E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.059E-01	1.054E-01	1.043E-01	1.004E-01	8.983E-02	5.721E-02	0.000E+00	0.000E+00
Am-241	Np-237+D	1.000E+00	2.030E-07	6.167E-07	1.400E-06	3.710E-06	7.564E-06	8.086E-06	0.000E+00	0.000E+00
Am-241	U-233	1.000E+00	6.147E-15	3.828E-14	1.867E-13	1.461E-12	9.078E-12	3.579E-11	0.000E+00	0.000E+00
Am-241	Th-229+D	1.000E+00	2.784E-18	4.024E-17	4.550E-16	1.119E-14	2.254E-13	4.223E-12	0.000E+00	0.000E+00
Am-241	ΣDSR (j)		1.059E-01	1.054E-01	1.043E-01	1.004E-01	8.983E-02	5.722E-02	0.000E+00	0.000E+00
Np-237+D	Np-237+D	1.000E+00	1.307E+00	1.265E+00	1.186E+00	9.437E-01	4.897E-01	4.630E-02	0.000E+00	0.000E+00
Np-237+D	U-233	1.000E+00	5.339E-08	1.446E-07	3.150E-07	8.110E-07	1.596E-06	1.495E-06	0.000E+00	0.000E+00
Np-237+D	Th-229+D	1.000E+00	3.386E-11	2.295E-10	1.175E-09	9.625E-09	6.426E-08	3.302E-07	0.000E+00	0.000E+00
Np-237+D	ΣDSR (j)		1.307E+00	1.265E+00	1.186E+00	9.437E-01	4.897E-01	4.630E-02	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	9.378E-02	9.334E-02	9.247E-02	8.945E-02	8.094E-02	5.272E-02	0.000E+00	0.000E+00
Pu-239	U-235+D	1.000E+00	9.705E-11	2.911E-10	6.762E-10	1.993E-09	5.485E-09	1.442E-08	0.000E+00	0.000E+00
Pu-239	Pa-231	1.000E+00	4.560E-15	3.261E-14	1.724E-13	1.494E-12	1.129E-11	7.698E-11	0.000E+00	0.000E+00
Pu-239	Ac-227+D	1.000E+00	2.903E-17	3.946E-16	4.289E-15	1.022E-13	1.990E-12	3.444E-11	0.000E+00	0.000E+00
Pu-239	ΣDSR (j)		9.378E-02	9.334E-02	9.247E-02	8.945E-02	8.094E-02	5.272E-02	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	4.640E-09	4.618E-09	4.575E-09	4.422E-09	3.995E-09	2.588E-09	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	9.374E-02	9.330E-02	9.242E-02	8.934E-02	8.072E-02	5.229E-02	0.000E+00	0.000E+00
Pu-240	U-236	1.000E+00	2.831E-10	8.631E-10	2.004E-09	5.788E-09	1.487E-08	2.942E-08	0.000E+00	0.000E+00
Pu-240	Th-232	1.000E+00	2.205E-20	1.445E-19	7.341E-19	6.226E-18	4.670E-17	3.168E-16	0.000E+00	0.000E+00
Pu-240	Ra-228+D	1.000E+00	1.694E-20	2.548E-19	2.839E-18	6.154E-17	9.133E-16	1.004E-14	0.000E+00	0.000E+00
Pu-240	Th-228+D	1.000E+00	1.069E-21	2.987E-20	6.262E-19	2.801E-17	6.330E-16	8.811E-15	0.000E+00	0.000E+00
Pu-240	ΣDSR (j)		9.374E-02	9.330E-02	9.242E-02	8.934E-02	8.072E-02	5.229E-02	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.500E-01	1.484E-01	1.452E-01	1.344E-01	1.072E-01	4.497E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	2.086E-02	2.071E-02	2.042E-02	1.944E-02	1.679E-02	9.294E-03	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	7.992E-08	2.274E-07	5.166E-07	1.479E-06	3.817E-06	7.793E-06	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	2.196E-09	1.559E-08	8.249E-08	7.237E-07	5.693E-06	4.574E-05	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	5.784E-12	6.120E-11	5.468E-10	1.118E-08	1.990E-07	2.903E-06	0.000E+00	0.000E+00
U-234	ΣDSR (j)		2.086E-02	2.071E-02	2.042E-02	1.944E-02	1.680E-02	9.351E-03	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	1.977E-01	1.970E-01	1.955E-01	1.904E-01	1.761E-01	1.292E-01	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	1.413E-05	4.295E-05	9.968E-05	2.882E-04	7.441E-04	1.503E-03	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	1.133E-07	7.251E-07	3.596E-06	2.861E-05	1.832E-04	8.438E-04	0.000E+00	0.000E+00
U-235+D	ΣDSR (j)		1.977E-01	1.970E-01	1.956E-01	1.907E-01	1.771E-01	1.316E-01	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	1.011E-06	1.004E-06	9.902E-07	9.422E-07	8.135E-07	4.499E-07	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	5.328E-02	5.302E-02	5.249E-02	5.066E-02	4.566E-02	3.025E-02	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	2.953E-08	8.804E-08	2.026E-07	5.785E-07	1.451E-06	2.648E-06	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	7.865E-14	5.136E-13	2.606E-12	2.200E-11	1.628E-10	1.055E-09	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	1.542E-15	2.352E-14	2.753E-13	7.150E-12	1.618E-10	4.149E-09	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	3.666E-18	7.954E-17	1.493E-15	8.707E-14	4.494E-12	2.234E-10	0.000E+00	0.000E+00
U-238+D	ΣDSR (j)		5.328E-02	5.302E-02	5.249E-02	5.066E-02	4.566E-02	3.026E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Surface CSM - AF 3,000 m²

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Attachment 4 to HEM-11-91

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	2.360E+02	2.372E+02	2.398E+02	2.490E+02	2.783E+02	4.369E+02	*3.431E+12	*3.431E+12
Np-237	1.913E+01	1.976E+01	2.109E+01	2.649E+01	5.105E+01	5.400E+02	*7.047E+08	*7.047E+08
Pu-239	2.666E+02	2.678E+02	2.703E+02	2.795E+02	3.089E+02	4.742E+02	*6.214E+10	*6.214E+10
Pu-240	2.667E+02	2.680E+02	2.705E+02	2.798E+02	3.097E+02	4.781E+02	*2.278E+11	*2.278E+11
Tc-99	1.666E+02	1.684E+02	1.722E+02	1.860E+02	2.331E+02	5.559E+02	*1.697E+10	*1.697E+10
U-234	1.199E+03	1.207E+03	1.224E+03	1.286E+03	1.489E+03	2.674E+03	*6.247E+09	*6.247E+09
U-235	1.264E+02	1.269E+02	1.278E+02	1.311E+02	1.412E+02	1.900E+02	*2.161E+06	*2.161E+06
U-238	4.692E+02	4.715E+02	4.763E+02	4.935E+02	5.475E+02	8.263E+02	*3.361E+05	*3.361E+05

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	1.059E-01	2.360E+02	1.059E-01	2.360E+02
Np-237	1.000E+00	0.000E+00	1.307E+00	1.913E+01	1.307E+00	1.913E+01
Pu-239	1.000E+00	0.000E+00	9.378E-02	2.666E+02	9.378E-02	2.666E+02
Pu-240	1.000E+00	0.000E+00	9.374E-02	2.667E+02	9.374E-02	2.667E+02
Tc-99	1.000E+00	0.000E+00	1.500E-01	1.666E+02	1.500E-01	1.666E+02
U-234	1.000E+00	0.000E+00	2.086E-02	1.199E+03	2.086E-02	1.199E+03
U-235	1.000E+00	0.000E+00	1.977E-01	1.264E+02	1.977E-01	1.264E+02
U-238	1.000E+00	0.000E+00	5.328E-02	4.692E+02	5.328E-02	4.692E+02

Summary : Hematite - Surface CSM - AF 3,000 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.059E-01	1.054E-01	1.043E-01	1.004E-01	8.983E-02	5.721E-02	0.000E+00	0.000E+00
Np-237	Am-241	1.000E+00	2.030E-07	6.167E-07	1.400E-06	3.710E-06	7.564E-06	8.086E-06	0.000E+00	0.000E+00
Np-237	Np-237	1.000E+00	1.307E+00	1.265E+00	1.186E+00	9.437E-01	4.897E-01	4.630E-02	0.000E+00	0.000E+00
Np-237	ΣDOSE (j)		1.307E+00	1.265E+00	1.186E+00	9.437E-01	4.897E-01	4.631E-02	0.000E+00	0.000E+00
U-233	Am-241	1.000E+00	6.147E-15	3.828E-14	1.867E-13	1.461E-12	9.078E-12	3.579E-11	0.000E+00	0.000E+00
U-233	Np-237	1.000E+00	5.339E-08	1.446E-07	3.150E-07	8.110E-07	1.596E-06	1.495E-06	0.000E+00	0.000E+00
U-233	ΣDOSE (j)		5.339E-08	1.446E-07	3.150E-07	8.110E-07	1.596E-06	1.495E-06	0.000E+00	0.000E+00
Th-229	Am-241	1.000E+00	2.784E-18	4.024E-17	4.550E-16	1.119E-14	2.254E-13	4.223E-12	0.000E+00	0.000E+00
Th-229	Np-237	1.000E+00	3.386E-11	2.295E-10	1.175E-09	9.625E-09	6.426E-08	3.302E-07	0.000E+00	0.000E+00
Th-229	ΣDOSE (j)		3.386E-11	2.295E-10	1.175E-09	9.625E-09	6.426E-08	3.302E-07	0.000E+00	0.000E+00
Pu-239	Pu-239	1.000E+00	9.378E-02	9.334E-02	9.247E-02	8.945E-02	8.094E-02	5.272E-02	0.000E+00	0.000E+00
U-235	Pu-239	1.000E+00	9.705E-11	2.911E-10	6.762E-10	1.993E-09	5.485E-09	1.442E-08	0.000E+00	0.000E+00
U-235	U-235	1.000E+00	1.977E-01	1.970E-01	1.955E-01	1.904E-01	1.761E-01	1.292E-01	0.000E+00	0.000E+00
U-235	ΣDOSE (j)		1.977E-01	1.970E-01	1.955E-01	1.904E-01	1.761E-01	1.292E-01	0.000E+00	0.000E+00
Pa-231	Pu-239	1.000E+00	4.560E-15	3.261E-14	1.724E-13	1.494E-12	1.129E-11	7.698E-11	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	1.413E-05	4.295E-05	9.968E-05	2.882E-04	7.441E-04	1.503E-03	0.000E+00	0.000E+00
Pa-231	ΣDOSE (j)		1.413E-05	4.295E-05	9.968E-05	2.882E-04	7.441E-04	1.503E-03	0.000E+00	0.000E+00
Ac-227	Pu-239	1.000E+00	2.903E-17	3.946E-16	4.289E-15	1.022E-13	1.990E-12	3.444E-11	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	1.133E-07	7.251E-07	3.596E-06	2.861E-05	1.832E-04	8.438E-04	0.000E+00	0.000E+00
Ac-227	ΣDOSE (j)		1.133E-07	7.251E-07	3.596E-06	2.861E-05	1.832E-04	8.438E-04	0.000E+00	0.000E+00
Pu-240	Pu-240	4.950E-08	4.640E-09	4.618E-09	4.575E-09	4.422E-09	3.995E-09	2.588E-09	0.000E+00	0.000E+00
Pu-240	Pu-240	1.000E+00	9.374E-02	9.330E-02	9.242E-02	8.934E-02	8.072E-02	5.229E-02	0.000E+00	0.000E+00
Pu-240	ΣDOSE (j)		9.374E-02	9.330E-02	9.242E-02	8.934E-02	8.072E-02	5.229E-02	0.000E+00	0.000E+00
U-236	Pu-240	1.000E+00	2.831E-10	8.631E-10	2.004E-09	5.788E-09	1.487E-08	2.942E-08	0.000E+00	0.000E+00
Th-232	Pu-240	1.000E+00	2.205E-20	1.445E-19	7.341E-19	6.226E-18	4.670E-17	3.168E-16	0.000E+00	0.000E+00
Ra-228	Pu-240	1.000E+00	1.694E-20	2.548E-19	2.839E-18	6.154E-17	9.133E-16	1.004E-14	0.000E+00	0.000E+00
Th-228	Pu-240	1.000E+00	1.069E-21	2.987E-20	6.262E-19	2.801E-17	6.330E-16	8.811E-15	0.000E+00	0.000E+00
Tc-99	Tc-99	1.000E+00	1.500E-01	1.484E-01	1.452E-01	1.344E-01	1.072E-01	4.497E-02	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	2.086E-02	2.071E-02	2.042E-02	1.944E-02	1.679E-02	9.294E-03	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	2.953E-08	8.804E-08	2.026E-07	5.785E-07	1.451E-06	2.648E-06	0.000E+00	0.000E+00
U-234	ΣDOSE (j)		2.086E-02	2.071E-02	2.042E-02	1.944E-02	1.679E-02	9.297E-03	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	7.992E-08	2.274E-07	5.166E-07	1.479E-06	3.817E-06	7.793E-06	0.000E+00	0.000E+00
Th-230	U-238	9.999E-01	7.865E-14	5.136E-13	2.606E-12	2.200E-11	1.628E-10	1.055E-09	0.000E+00	0.000E+00
Th-230	ΣDOSE (j)		7.992E-08	2.274E-07	5.166E-07	1.479E-06	3.817E-06	7.794E-06	0.000E+00	0.000E+00

Summary : Hematite - Surface CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	2.196E-09	1.559E-08	8.249E-08	7.237E-07	5.693E-06	4.574E-05	0.000E+00	0.000E+00
Ra-226	U-238	9.999E-01	1.542E-15	2.352E-14	2.753E-13	7.150E-12	1.618E-10	4.149E-09	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)		2.196E-09	1.559E-08	8.249E-08	7.237E-07	5.694E-06	4.574E-05	0.000E+00	0.000E+00
Pb-210	U-234	1.000E+00	5.784E-12	6.120E-11	5.468E-10	1.118E-08	1.990E-07	2.903E-06	0.000E+00	0.000E+00
Pb-210	U-238	9.999E-01	3.666E-18	7.954E-17	1.493E-15	8.707E-14	4.494E-12	2.234E-10	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		5.784E-12	6.120E-11	5.468E-10	1.118E-08	1.990E-07	2.904E-06	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	1.011E-06	1.004E-06	9.902E-07	9.422E-07	8.135E-07	4.499E-07	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	5.328E-02	5.302E-02	5.249E-02	5.066E-02	4.566E-02	3.025E-02	0.000E+00	0.000E+00
U-238	ΣDOSE(j)		5.328E-02	5.302E-02	5.249E-02	5.066E-02	4.566E-02	3.025E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Surface CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.983E-01	9.949E-01	9.832E-01	9.505E-01	8.444E-01	6.021E-01	1.843E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.190E-07	9.280E-07	2.785E-06	6.291E-06	9.315E-06	7.094E-06	2.172E-06
Np-237	Np-237	1.000E+00	1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.409E-02	1.582E-04	2.142E-13
Np-237	ΣS(j):		1.000E+00	9.712E-01	9.162E-01	7.470E-01	4.168E-01	5.410E-02	1.653E-04	2.172E-06
U-233	Am-241	1.000E+00	0.000E+00	7.003E-13	6.163E-12	6.339E-11	4.623E-10	2.728E-09	6.906E-09	5.214E-09
U-233	Np-237	1.000E+00	0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.381E-06
U-233	ΣS(j):		0.000E+00	4.304E-06	1.250E-05	3.734E-05	8.308E-05	1.148E-04	6.805E-05	8.386E-06
Th-229	Am-241	1.000E+00	0.000E+00	2.211E-17	5.869E-16	2.051E-14	4.724E-13	1.079E-11	1.079E-10	5.381E-10
Th-229	Np-237	1.000E+00	0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.155E-06
Th-229	ΣS(j):		0.000E+00	2.043E-10	1.800E-09	1.858E-08	1.371E-07	8.482E-07	2.542E-06	4.156E-06
Pu-239	Pu-239	1.000E+00	1.000E+00	9.994E-01	9.981E-01	9.936E-01	9.809E-01	9.378E-01	8.249E-01	5.264E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.831E-10	2.939E-09	9.672E-09	2.799E-08	8.233E-08	1.750E-07	1.998E-07
U-235	U-235	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
U-235	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Pa-231	Pu-239	1.000E+00	0.000E+00	1.040E-14	9.339E-14	1.028E-12	9.005E-12	9.116E-11	6.340E-10	3.123E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Pa-231	ΣS(j):		0.000E+00	2.112E-05	6.315E-05	2.080E-04	6.032E-04	1.788E-03	3.895E-03	4.964E-03
Ac-227	Pu-239	1.000E+00	0.000E+00	1.096E-16	2.904E-15	1.010E-13	2.302E-12	5.149E-11	5.200E-10	2.950E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Ac-227	ΣS(j):		0.000E+00	3.328E-07	2.924E-06	2.994E-05	2.161E-04	1.269E-03	3.554E-03	4.858E-03
Pu-240	Pu-240	4.950E-08	4.950E-08	4.946E-08	4.939E-08	4.915E-08	4.844E-08	4.607E-08	3.990E-08	2.412E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
Pu-240	ΣS(j):		1.000E+00	9.993E-01	9.978E-01	9.928E-01	9.787E-01	9.306E-01	8.060E-01	4.872E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.955E-08	8.832E-08	2.906E-07	8.402E-07	2.465E-06	5.192E-06	5.699E-06
Th-232	Pu-240	1.000E+00	0.000E+00	7.293E-19	6.548E-18	7.212E-17	6.333E-16	6.464E-15	4.612E-14	2.533E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.845E-20	7.234E-19	2.205E-17	3.793E-16	5.523E-15	4.400E-14	2.508E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.415E-21	1.630E-19	1.156E-17	3.048E-16	5.220E-15	4.331E-14	2.500E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.931E-01	9.794E-01	9.331E-01	8.123E-01	5.001E-01	1.251E-01	9.785E-04
U-234	U-234	1.000E+00	1.000E+00	9.970E-01	9.911E-01	9.705E-01	9.142E-01	7.415E-01	4.077E-01	5.025E-02
U-234	U-238	9.999E-01	0.000E+00	2.826E-06	8.428E-06	2.751E-05	7.775E-05	2.102E-04	3.469E-04	1.426E-04
U-234	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02
Th-230	U-234	1.000E+00	0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.772E-04	1.777E-03	2.818E-03
Th-230	U-238	9.999E-01	0.000E+00	1.273E-11	1.141E-10	1.251E-09	1.082E-08	1.047E-07	6.449E-07	2.259E-06
Th-230	ΣS(j):		0.000E+00	8.988E-06	2.688E-05	8.868E-05	2.582E-04	7.773E-04	1.777E-03	2.820E-03

Summary : Hematite - Surface CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.737E-05	1.256E-04	7.250E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.840E-15	4.951E-14	1.813E-12	4.738E-11	1.569E-09	3.105E-08	4.352E-07
Ra-226	ΣS(j):		0.000E+00	1.948E-09	1.749E-08	1.927E-07	1.694E-06	1.738E-05	1.257E-04	7.254E-04
Pb-210	U-234	1.000E+00	0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.600E-06	1.009E-04	6.698E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.421E-17	1.133E-15	1.326E-13	9.282E-12	7.320E-10	2.307E-08	3.951E-07
Pb-210	ΣS(j):		0.000E+00	2.002E-11	5.311E-10	1.850E-08	4.232E-07	9.601E-06	1.009E-04	6.702E-04
U-238	U-238	5.400E-05	5.400E-05	5.384E-05	5.352E-05	5.241E-05	4.937E-05	4.005E-05	2.203E-05	2.721E-06
U-238	U-238	9.999E-01	9.999E-01	9.970E-01	9.910E-01	9.705E-01	9.142E-01	7.417E-01	4.080E-01	5.039E-02
U-238	ΣS(j):		1.000E+00	9.970E-01	9.911E-01	9.706E-01	9.143E-01	7.417E-01	4.080E-01	5.039E-02

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 2.78 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 2.066E-01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.599E-04	0.0008	6.140E-05	0.0003	0.000E+00	0.0000	3.168E-04	0.0015	8.511E-06	0.0000	1.139E-05	0.0001	1.014E-04	0.0005
Ra-226	2.048E-01	0.9913	2.407E-05	0.0001	0.000E+00	0.0000	1.091E-03	0.0053	2.713E-06	0.0000	8.804E-06	0.0000	2.029E-05	0.0001
Total	2.050E-01	0.9920	8.548E-05	0.0004	0.000E+00	0.0000	1.408E-03	0.0068	1.122E-05	0.0001	2.019E-05	0.0001	1.217E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.595E-04	0.0032
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.060E-01	0.9968
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.066E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.546E-04	0.0008	5.921E-05	0.0003	0.000E+00	0.0000	3.055E-04	0.0015	8.207E-06	0.0000	1.098E-05	0.0001	9.781E-05	0.0005
Ra-226	2.041E-01	0.9913	2.584E-05	0.0001	0.000E+00	0.0000	1.096E-03	0.0053	2.962E-06	0.0000	9.113E-06	0.0000	2.329E-05	0.0001
Total	2.043E-01	0.9920	8.504E-05	0.0004	0.000E+00	0.0000	1.402E-03	0.0068	1.117E-05	0.0001	2.009E-05	0.0001	1.211E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.363E-04	0.0031
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.053E-01	0.9969
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.059E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.445E-04	0.0007	5.504E-05	0.0003	0.000E+00	0.0000	2.840E-04	0.0014	7.630E-06	0.0000	1.021E-05	0.0000	9.093E-05	0.0004
Ra-226	2.027E-01	0.9914	2.913E-05	0.0001	0.000E+00	0.0000	1.105E-03	0.0054	3.424E-06	0.0000	9.685E-06	0.0000	2.892E-05	0.0001
Total	2.029E-01	0.9921	8.418E-05	0.0004	0.000E+00	0.0000	1.389E-03	0.0068	1.105E-05	0.0001	1.989E-05	0.0001	1.198E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.923E-04	0.0029
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.039E-01	0.9971
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.045E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.141E-04	0.0006	4.262E-05	0.0002	0.000E+00	0.0000	2.199E-04	0.0011	5.908E-06	0.0000	7.905E-06	0.0000	7.041E-05	0.0004
Ra-226	1.979E-01	0.9916	3.860E-05	0.0002	0.000E+00	0.0000	1.123E-03	0.0056	4.756E-06	0.0000	1.130E-05	0.0001	4.516E-05	0.0002
Total	1.980E-01	0.9921	8.122E-05	0.0004	0.000E+00	0.0000	1.343E-03	0.0067	1.066E-05	0.0001	1.921E-05	0.0001	1.156E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.609E-04	0.0023
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.991E-01	0.9977
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.995E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.805E-05	0.0003	2.043E-05	0.0001	0.000E+00	0.0000	1.054E-04	0.0006	2.831E-06	0.0000	3.788E-06	0.0000	3.374E-05	0.0002
Ra-226	1.837E-01	0.9920	5.278E-05	0.0003	0.000E+00	0.0000	1.111E-03	0.0060	6.777E-06	0.0000	1.355E-05	0.0001	7.032E-05	0.0004
Total	1.838E-01	0.9923	7.320E-05	0.0004	0.000E+00	0.0000	1.216E-03	0.0066	9.608E-06	0.0001	1.734E-05	0.0001	1.041E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.242E-04	0.0012
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.850E-01	0.9988
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.852E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.353E-06	0.0000	1.438E-06	0.0000	0.000E+00	0.0000	7.421E-06	0.0001	1.994E-07	0.0000	2.667E-07	0.0000	2.376E-06	0.0000
Ra-226	1.325E-01	0.9930	4.635E-05	0.0003	0.000E+00	0.0000	7.899E-04	0.0059	6.071E-06	0.0000	1.107E-05	0.0001	6.548E-05	0.0005
Total	1.325E-01	0.9930	4.779E-05	0.0004	0.000E+00	0.0000	7.973E-04	0.0060	6.271E-06	0.0000	1.133E-05	0.0001	6.786E-05	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.705E-05	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.334E-01	0.9999
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.334E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	6.595E-04	6.363E-04	5.923E-04	4.609E-04	2.242E-04	1.705E-05	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	2.060E-01	2.053E-01	2.038E-01	1.989E-01	1.846E-01	1.330E-01	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	1.557E-05	3.608E-05	7.382E-05	1.841E-04	3.646E-04	3.969E-04	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		2.060E-01	2.053E-01	2.039E-01	1.991E-01	1.850E-01	1.334E-01	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	3.791E+04	3.929E+04	4.221E+04	5.424E+04	1.115E+05	1.466E+06	*7.634E+13	*7.634E+13	
Ra-226	1.214E+02	1.218E+02	1.226E+02	1.256E+02	1.351E+02	1.874E+02	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	6.595E-04	3.791E+04	6.595E-04	3.791E+04
Ra-226	1.000E+00	0.000E+00	2.060E-01	1.214E+02	2.060E-01	1.214E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Pb-210	Pb-210	1.000E+00	6.595E-04	6.363E-04	5.923E-04	4.609E-04	2.242E-04	1.705E-05	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	1.557E-05	3.608E-05	7.382E-05	1.841E-04	3.646E-04	3.969E-04	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		6.750E-04	6.724E-04	6.662E-04	6.450E-04	5.888E-04	4.140E-04	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	2.060E-01	2.053E-01	2.038E-01	1.989E-01	1.846E-01	1.330E-01	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.30 seconds

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Time = 3.000E+00	11
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE RA-226+C CSM.RAD

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.029E+00	1.025E+00	1.019E+00	9.949E-01	9.266E-01	6.768E-01	0.000E+00	0.000E+00
M(t):	4.115E-02	4.102E-02	4.075E-02	3.980E-02	3.706E-02	2.707E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 1.029E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.100E-04	0.0007	7.953E-05	0.0001	0.000E+00	0.0000	3.168E-03	0.0031	8.511E-05	0.0001	1.139E-04	0.0001	1.014E-03	0.0010
Ra-226	1.012E+00	0.9840	3.118E-05	0.0000	0.000E+00	0.0000	1.091E-02	0.0106	2.713E-05	0.0000	8.804E-05	0.0001	2.029E-04	0.0002
Total	1.013E+00	0.9847	1.107E-04	0.0001	0.000E+00	0.0000	1.408E-02	0.0137	1.122E-04	0.0001	2.019E-04	0.0002	1.217E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.171E-03	0.0050
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.024E+00	0.9950
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.029E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.865E-04	0.0007	7.669E-05	0.0001	0.000E+00	0.0000	3.055E-03	0.0030	8.207E-05	0.0001	1.098E-04	0.0001	9.781E-04	0.0010
Ra-226	1.009E+00	0.9841	3.346E-05	0.0000	0.000E+00	0.0000	1.096E-02	0.0107	2.962E-05	0.0000	9.113E-05	0.0001	2.329E-04	0.0002
Total	1.010E+00	0.9847	1.101E-04	0.0001	0.000E+00	0.0000	1.402E-02	0.0137	1.117E-04	0.0001	2.009E-04	0.0002	1.211E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.988E-03	0.0049
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.020E+00	0.9951
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.025E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.419E-04	0.0006	7.129E-05	0.0001	0.000E+00	0.0000	2.840E-03	0.0028	7.630E-05	0.0001	1.021E-04	0.0001	9.093E-04	0.0009
Ra-226	1.002E+00	0.9841	3.774E-05	0.0000	0.000E+00	0.0000	1.105E-02	0.0108	3.424E-05	0.0000	9.685E-05	0.0001	2.892E-04	0.0003
Total	1.003E+00	0.9848	1.090E-04	0.0001	0.000E+00	0.0000	1.389E-02	0.0136	1.105E-04	0.0001	1.989E-04	0.0002	1.198E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.641E-03	0.0046
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.014E+00	0.9954
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.019E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.072E-04	0.0005	5.520E-05	0.0001	0.000E+00	0.0000	2.199E-03	0.0022	5.908E-05	0.0001	7.905E-05	0.0001	7.041E-04	0.0007
Ra-226	9.794E-01	0.9844	4.999E-05	0.0001	0.000E+00	0.0000	1.123E-02	0.0113	4.756E-05	0.0000	1.130E-04	0.0001	4.516E-04	0.0005
Total	9.799E-01	0.9849	1.052E-04	0.0001	0.000E+00	0.0000	1.343E-02	0.0135	1.066E-04	0.0001	1.921E-04	0.0002	1.156E-03	0.0012

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.604E-03	0.0036
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.913E-01	0.9964
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.949E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.585E-04	0.0003	2.646E-05	0.0000	0.000E+00	0.0000	1.054E-03	0.0011	2.831E-05	0.0000	3.788E-05	0.0000	3.374E-04	0.0004
Ra-226	9.127E-01	0.9851	6.836E-05	0.0001	0.000E+00	0.0000	1.111E-02	0.0120	6.777E-05	0.0001	1.355E-04	0.0001	7.032E-04	0.0008
Total	9.130E-01	0.9854	9.482E-05	0.0001	0.000E+00	0.0000	1.216E-02	0.0131	9.608E-05	0.0001	1.734E-04	0.0002	1.041E-03	0.0011

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.743E-03	0.0019
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.248E-01	0.9981
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.266E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.396E-05	0.0000	1.863E-06	0.0000	0.000E+00	0.0000	7.421E-05	0.0001	1.994E-06	0.0000	2.667E-06	0.0000	2.376E-05	0.0000
Ra-226	6.679E-01	0.9868	6.003E-05	0.0001	0.000E+00	0.0000	7.899E-03	0.0117	6.071E-05	0.0001	1.107E-04	0.0002	6.548E-04	0.0010
Total	6.679E-01	0.9869	6.190E-05	0.0001	0.000E+00	0.0000	7.973E-03	0.0118	6.271E-05	0.0001	1.133E-04	0.0002	6.786E-04	0.0010

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.285E-04	0.0002
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.767E-01	0.9998
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.768E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	5.171E-03	4.988E-03	4.641E-03	3.604E-03	1.743E-03	1.285E-04	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	1.023E+00	1.020E+00	1.013E+00	9.899E-01	9.220E-01	6.737E-01	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	1.335E-04	2.953E-04	5.907E-04	1.452E-03	2.844E-03	2.998E-03	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		1.024E+00	1.020E+00	1.014E+00	9.913E-01	9.248E-01	6.767E-01	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	4.834E+03	5.012E+03	5.387E+03	6.937E+03	1.435E+04	1.946E+05	*7.634E+13	*7.634E+13	
Ra-226	2.442E+01	2.450E+01	2.466E+01	2.522E+01	2.703E+01	3.694E+01	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	5.171E-03	4.834E+03	5.171E-03	4.834E+03
Ra-226	1.000E+00	0.000E+00	1.024E+00	2.442E+01	1.024E+00	2.442E+01

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	5.171E-03	4.988E-03	4.641E-03	3.604E-03	1.743E-03	1.285E-04	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	1.335E-04	2.953E-04	5.907E-04	1.452E-03	2.844E-03	2.998E-03	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		5.305E-03	5.284E-03	5.232E-03	5.056E-03	4.587E-03	3.126E-03	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	1.023E+00	1.020E+00	1.013E+00	9.899E-01	9.220E-01	6.737E-01	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.38 seconds

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Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Initial Soil Concentrations, pCi/g

Ra-226	1.000E+00

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.101E+00	2.095E+00	2.084E+00	2.044E+00	1.929E+00	1.488E+00	0.000E+00	0.000E+00
M(t):	8.403E-02	8.380E-02	8.336E-02	8.178E-02	7.718E-02	5.951E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 2.101E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.224E-03	0.0006	1.027E-04	0.0000	0.000E+00	0.0000	3.169E-02	0.0151	8.511E-04	0.0004	1.139E-03	0.0005	1.014E-02	0.0048
Ra-226	1.943E+00	0.9250	4.027E-05	0.0000	0.000E+00	0.0000	1.091E-01	0.0519	2.713E-04	0.0001	8.804E-04	0.0004	2.029E-03	0.0010
Total	1.944E+00	0.9256	1.430E-04	0.0001	0.000E+00	0.0000	1.408E-01	0.0670	1.122E-03	0.0005	2.019E-03	0.0010	1.217E-02	0.0058

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.515E-02	0.0215
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.056E+00	0.9785
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.101E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.184E-03	0.0006	9.904E-05	0.0000	0.000E+00	0.0000	3.055E-02	0.0146	8.207E-04	0.0004	1.098E-03	0.0005	9.781E-03	0.0047
Ra-226	1.938E+00	0.9252	4.322E-05	0.0000	0.000E+00	0.0000	1.096E-01	0.0523	2.962E-04	0.0001	9.113E-04	0.0004	2.329E-03	0.0011
Total	1.940E+00	0.9257	1.423E-04	0.0001	0.000E+00	0.0000	1.402E-01	0.0669	1.117E-03	0.0005	2.009E-03	0.0010	1.211E-02	0.0058

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.354E-02	0.0208
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.052E+00	0.9792
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.095E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.109E-03	0.0005	9.207E-05	0.0000	0.000E+00	0.0000	2.840E-02	0.0136	7.630E-04	0.0004	1.021E-03	0.0005	9.093E-03	0.0044
Ra-226	1.929E+00	0.9255	4.873E-05	0.0000	0.000E+00	0.0000	1.105E-01	0.0530	3.424E-04	0.0002	9.685E-04	0.0005	2.892E-03	0.0014
Total	1.930E+00	0.9261	1.408E-04	0.0001	0.000E+00	0.0000	1.389E-01	0.0666	1.105E-03	0.0005	1.989E-03	0.0010	1.198E-02	0.0058

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.048E-02	0.0194
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.043E+00	0.9806
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.084E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	8.794E-04	0.0004	7.130E-05	0.0000	0.000E+00	0.0000	2.199E-02	0.0108	5.908E-04	0.0003	7.905E-04	0.0004	7.041E-03	0.0034
Ra-226	1.895E+00	0.9267	6.456E-05	0.0000	0.000E+00	0.0000	1.123E-01	0.0549	4.756E-04	0.0002	1.130E-03	0.0006	4.516E-03	0.0022
Total	1.895E+00	0.9271	1.359E-04	0.0001	0.000E+00	0.0000	1.343E-01	0.0657	1.066E-03	0.0005	1.921E-03	0.0009	1.156E-02	0.0057

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.137E-02	0.0153
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.013E+00	0.9847
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.044E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.532E-04	0.0002	3.417E-05	0.0000	0.000E+00	0.0000	1.054E-02	0.0055	2.831E-04	0.0001	3.788E-04	0.0002	3.374E-03	0.0017
Ra-226	1.794E+00	0.9299	8.829E-05	0.0000	0.000E+00	0.0000	1.111E-01	0.0576	6.777E-04	0.0004	1.355E-03	0.0007	7.032E-03	0.0036
Total	1.795E+00	0.9301	1.225E-04	0.0001	0.000E+00	0.0000	1.216E-01	0.0630	9.608E-04	0.0005	1.734E-03	0.0009	1.041E-02	0.0054

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.506E-02	0.0078
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.914E+00	0.9922
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.929E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.362E-05	0.0000	2.406E-06	0.0000	0.000E+00	0.0000	7.422E-04	0.0005	1.994E-05	0.0000	2.667E-05	0.0000	2.376E-04	0.0002
Ra-226	1.399E+00	0.9406	7.753E-05	0.0001	0.000E+00	0.0000	7.899E-02	0.0531	6.071E-04	0.0004	1.107E-03	0.0007	6.548E-03	0.0044
Total	1.399E+00	0.9406	7.994E-05	0.0001	0.000E+00	0.0000	7.973E-02	0.0536	6.271E-04	0.0004	1.133E-03	0.0008	6.786E-03	0.0046

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.072E-03	0.0007
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.487E+00	0.9993
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.488E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	4.515E-02	4.354E-02	4.048E-02	3.137E-02	1.506E-02	1.072E-03	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	2.054E+00	2.049E+00	2.038E+00	2.000E+00	1.890E+00	1.461E+00	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	1.232E-03	2.650E-03	5.225E-03	1.271E-02	2.465E-02	2.508E-02	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		2.056E+00	2.052E+00	2.043E+00	2.013E+00	1.914E+00	1.487E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	5.538E+02	5.742E+02	6.176E+02	7.970E+02	1.660E+03	2.331E+04	*7.634E+13	*7.634E+13	
Ra-226	1.216E+01	1.219E+01	1.223E+01	1.242E+01	1.306E+01	1.682E+01	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	4.515E-02	5.538E+02	4.515E-02	5.538E+02
Ra-226	1.000E+00	0.000E+00	2.056E+00	1.216E+01	2.056E+00	1.216E+01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	4.515E-02	4.354E-02	4.048E-02	3.137E-02	1.506E-02	1.072E-03	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	1.232E-03	2.650E-03	5.225E-03	1.271E-02	2.465E-02	2.508E-02	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		4.638E-02	4.618E-02	4.571E-02	4.408E-02	3.972E-02	2.615E-02	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	2.054E+00	2.049E+00	2.038E+00	2.000E+00	1.890E+00	1.461E+00	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.28 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Initial Soil Concentrations, pCi/g

Ra-226	1.000E+00

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

M(t): 1.547E-01 1.542E-01 1.533E-01 1.500E-01 1.407E-01 1.064E-01 0.000E+00 0.000E+00

Maximum TDOSE(t): 3.866E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.393E-03	0.0004	1.322E-04	0.0000	0.000E+00	0.0000	3.169E-01	0.0820	8.511E-03	0.0022	1.139E-02	0.0029	1.014E-01	0.0262
Ra-226	2.303E+00	0.5958	5.182E-05	0.0000	0.000E+00	0.0000	1.091E+00	0.2822	2.713E-03	0.0007	8.804E-03	0.0023	2.029E-02	0.0052
Total	2.305E+00	0.5961	1.840E-04	0.0000	0.000E+00	0.0000	1.408E+00	0.3642	1.122E-02	0.0029	2.019E-02	0.0052	1.217E-01	0.0315

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.397E-01	0.1137
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.427E+00	0.8863
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.866E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.348E-03	0.0003	1.274E-04	0.0000	0.000E+00	0.0000	3.055E-01	0.0793	8.207E-03	0.0021	1.098E-02	0.0028	9.781E-02	0.0254
Ra-226	2.299E+00	0.5964	5.561E-05	0.0000	0.000E+00	0.0000	1.096E+00	0.2844	2.962E-03	0.0008	9.113E-03	0.0024	2.329E-02	0.0060
Total	2.301E+00	0.5968	1.830E-04	0.0000	0.000E+00	0.0000	1.402E+00	0.3637	1.117E-02	0.0029	2.009E-02	0.0052	1.211E-01	0.0314

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.240E-01	0.1100
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.431E+00	0.8900
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.855E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.262E-03	0.0003	1.185E-04	0.0000	0.000E+00	0.0000	2.840E-01	0.0741	7.630E-03	0.0020	1.021E-02	0.0027	9.093E-02	0.0237
Ra-226	2.291E+00	0.5978	6.271E-05	0.0000	0.000E+00	0.0000	1.105E+00	0.2883	3.424E-03	0.0009	9.685E-03	0.0025	2.892E-02	0.0075
Total	2.292E+00	0.5982	1.812E-04	0.0000	0.000E+00	0.0000	1.389E+00	0.3624	1.105E-02	0.0029	1.989E-02	0.0052	1.198E-01	0.0313

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.942E-01	0.1029
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.438E+00	0.8971
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.832E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.004E-03	0.0003	9.174E-05	0.0000	0.000E+00	0.0000	2.199E-01	0.0586	5.908E-03	0.0016	7.905E-03	0.0021	7.041E-02	0.0188
Ra-226	2.261E+00	0.6028	8.307E-05	0.0000	0.000E+00	0.0000	1.123E+00	0.2995	4.756E-03	0.0013	1.130E-02	0.0030	4.516E-02	0.0120
Total	2.262E+00	0.6031	1.748E-04	0.0000	0.000E+00	0.0000	1.343E+00	0.3581	1.066E-02	0.0028	1.921E-02	0.0051	1.156E-01	0.0308

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.053E-01	0.0814
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.445E+00	0.9186
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.750E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.212E-04	0.0001	4.396E-05	0.0000	0.000E+00	0.0000	1.054E-01	0.0300	2.831E-03	0.0008	3.788E-03	0.0011	3.374E-02	0.0096
Ra-226	2.170E+00	0.6168	1.136E-04	0.0000	0.000E+00	0.0000	1.111E+00	0.3157	6.777E-03	0.0019	1.355E-02	0.0039	7.032E-02	0.0200
Total	2.170E+00	0.6170	1.576E-04	0.0000	0.000E+00	0.0000	1.216E+00	0.3457	9.608E-03	0.0027	1.734E-02	0.0049	1.041E-01	0.0296

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.463E-01	0.0416
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.371E+00	0.9584
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.517E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.143E-05	0.0000	3.095E-06	0.0000	0.000E+00	0.0000	7.422E-03	0.0028	1.994E-04	0.0001	2.667E-04	0.0001	2.376E-03	0.0009
Ra-226	1.777E+00	0.6680	9.976E-05	0.0000	0.000E+00	0.0000	7.899E-01	0.2970	6.071E-03	0.0023	1.107E-02	0.0042	6.548E-02	0.0246
Total	1.777E+00	0.6680	1.029E-04	0.0000	0.000E+00	0.0000	7.974E-01	0.2998	6.271E-03	0.0024	1.133E-02	0.0043	6.786E-02	0.0255

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.032E-02	0.0039
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.649E+00	0.9961
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.660E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	4.397E-01	4.240E-01	3.942E-01	3.053E-01	1.463E-01	1.032E-02	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	3.414E+00	3.405E+00	3.387E+00	3.321E+00	3.131E+00	2.408E+00	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	1.214E-02	2.596E-02	5.103E-02	1.238E-01	2.396E-01	2.414E-01	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		3.427E+00	3.431E+00	3.438E+00	3.445E+00	3.371E+00	2.649E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	5.685E+01	5.896E+01	6.342E+01	8.190E+01	1.708E+02	2.423E+03	*7.634E+13	*7.634E+13	
Ra-226	7.296E+00	7.286E+00	7.272E+00	7.257E+00	7.417E+00	9.437E+00	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	4.397E-01	5.685E+01	4.397E-01	5.685E+01
Ra-226	1.000E+00	8.89 ± 0.02	3.445E+00	7.256E+00	3.427E+00	7.296E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	4.397E-01	4.240E-01	3.942E-01	3.053E-01	1.463E-01	1.032E-02	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	1.214E-02	2.596E-02	5.103E-02	1.238E-01	2.396E-01	2.414E-01	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		4.519E-01	4.500E-01	4.452E-01	4.291E-01	3.860E-01	2.517E-01	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	3.414E+00	3.405E+00	3.387E+00	3.321E+00	3.131E+00	2.408E+00	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.36 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 4.249E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.454E-03	0.0003	1.693E-04	0.0000	0.000E+00	0.0000	3.169E-01	0.0746	8.511E-02	0.0200	1.139E-01	0.0268	1.014E-01	0.0239
Ra-226	2.403E+00	0.5656	6.636E-05	0.0000	0.000E+00	0.0000	1.091E+00	0.2568	2.713E-02	0.0064	8.804E-02	0.0207	2.029E-02	0.0048
Total	2.404E+00	0.5659	2.356E-04	0.0001	0.000E+00	0.0000	1.408E+00	0.3314	1.122E-01	0.0264	2.019E-01	0.0475	1.217E-01	0.0287

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.189E-01	0.1457
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.630E+00	0.8543
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.249E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.408E-03	0.0003	1.632E-04	0.0000	0.000E+00	0.0000	3.055E-01	0.0721	8.207E-02	0.0194	1.098E-01	0.0259	9.781E-02	0.0231
Ra-226	2.399E+00	0.5663	7.122E-05	0.0000	0.000E+00	0.0000	1.096E+00	0.2588	2.962E-02	0.0070	9.113E-02	0.0215	2.329E-02	0.0055
Total	2.401E+00	0.5666	2.344E-04	0.0001	0.000E+00	0.0000	1.402E+00	0.3309	1.117E-01	0.0264	2.009E-01	0.0474	1.211E-01	0.0286

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.968E-01	0.1409
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.640E+00	0.8591
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.236E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.319E-03	0.0003	1.517E-04	0.0000	0.000E+00	0.0000	2.840E-01	0.0675	7.630E-02	0.0181	1.021E-01	0.0242	9.093E-02	0.0216
Ra-226	2.391E+00	0.5679	8.031E-05	0.0000	0.000E+00	0.0000	1.105E+00	0.2624	3.424E-02	0.0081	9.685E-02	0.0230	2.892E-02	0.0069
Total	2.393E+00	0.5682	2.320E-04	0.0001	0.000E+00	0.0000	1.389E+00	0.3298	1.105E-01	0.0263	1.989E-01	0.0472	1.198E-01	0.0285

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.548E-01	0.1318
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.656E+00	0.8682
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.211E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.049E-03	0.0003	1.175E-04	0.0000	0.000E+00	0.0000	2.199E-01	0.0534	5.908E-02	0.0143	7.905E-02	0.0192	7.041E-02	0.0171
Ra-226	2.363E+00	0.5733	1.064E-04	0.0000	0.000E+00	0.0000	1.123E+00	0.2725	4.756E-02	0.0115	1.130E-01	0.0274	4.516E-02	0.0110
Total	2.364E+00	0.5736	2.239E-04	0.0001	0.000E+00	0.0000	1.343E+00	0.3259	1.066E-01	0.0259	1.921E-01	0.0466	1.156E-01	0.0280

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.297E-01	0.1042
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.692E+00	0.8958
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.122E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.454E-04	0.0001	5.630E-05	0.0000	0.000E+00	0.0000	1.054E-01	0.0273	2.831E-02	0.0073	3.788E-02	0.0098	3.374E-02	0.0087
Ra-226	2.277E+00	0.5888	1.455E-04	0.0000	0.000E+00	0.0000	1.111E+00	0.2872	6.777E-02	0.0175	1.355E-01	0.0350	7.032E-02	0.0182
Total	2.277E+00	0.5889	2.018E-04	0.0001	0.000E+00	0.0000	1.216E+00	0.3144	9.608E-02	0.0248	1.734E-01	0.0448	1.041E-01	0.0269

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.059E-01	0.0533
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.661E+00	0.9467
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.867E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.404E-05	0.0000	3.964E-06	0.0000	0.000E+00	0.0000	7.422E-03	0.0025	1.994E-03	0.0007	2.667E-03	0.0009	2.376E-03	0.0008
Ra-226	1.891E+00	0.6449	1.278E-04	0.0000	0.000E+00	0.0000	7.899E-01	0.2694	6.071E-02	0.0207	1.107E-01	0.0377	6.548E-02	0.0223
Total	1.891E+00	0.6449	1.317E-04	0.0000	0.000E+00	0.0000	7.974E-01	0.2719	6.271E-02	0.0214	1.133E-01	0.0387	6.786E-02	0.0231

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.452E-02	0.0050
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.918E+00	0.9950
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.932E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	6.189E-01	5.968E-01	5.548E-01	4.297E-01	2.059E-01	1.452E-02	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	3.615E+00	3.605E+00	3.586E+00	3.520E+00	3.326E+00	2.579E+00	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	1.521E-02	3.449E-02	6.979E-02	1.723E-01	3.355E-01	3.385E-01	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		3.630E+00	3.640E+00	3.656E+00	3.692E+00	3.661E+00	2.918E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	4.039E+01	4.189E+01	4.506E+01	5.819E+01	1.214E+02	1.722E+03	*7.634E+13	*7.634E+13	
Ra-226	6.887E+00	6.869E+00	6.838E+00	6.771E+00	6.828E+00	8.568E+00	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	6.189E-01	4.039E+01	6.189E-01	4.039E+01
Ra-226	1.000E+00	15.84 ± 0.03	3.701E+00	6.756E+00	3.630E+00	6.887E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Pb-210	Pb-210	1.000E+00	6.189E-01	5.968E-01	5.548E-01	4.297E-01	2.059E-01	1.452E-02	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	1.521E-02	3.449E-02	6.979E-02	1.723E-01	3.355E-01	3.385E-01	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		6.341E-01	6.313E-01	6.246E-01	6.020E-01	5.414E-01	3.530E-01	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	3.615E+00	3.605E+00	3.586E+00	3.520E+00	3.326E+00	2.579E+00	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.97 seconds

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Time = 3.000E+00	11
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.833E-01	4.817E-01	4.785E-01	4.673E-01	4.348E-01	3.165E-01	0.000E+00	0.000E+00
M(t):	1.933E-02	1.927E-02	1.914E-02	1.869E-02	1.739E-02	1.266E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 4.833E-01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.461E-04	0.0007	6.949E-05	0.0001	0.000E+00	0.0000	9.505E-04	0.0020	2.553E-05	0.0001	3.416E-05	0.0001	3.043E-04	0.0006
Ra-226	4.782E-01	0.9894	2.725E-05	0.0001	0.000E+00	0.0000	3.274E-03	0.0068	8.139E-06	0.0000	2.641E-05	0.0001	6.088E-05	0.0001
Total	4.786E-01	0.9901	9.674E-05	0.0002	0.000E+00	0.0000	4.224E-03	0.0087	3.367E-05	0.0001	6.058E-05	0.0001	3.652E-04	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.730E-03	0.0036
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.816E-01	0.9964
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.833E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.347E-04	0.0007	6.701E-05	0.0001	0.000E+00	0.0000	9.165E-04	0.0019	2.462E-05	0.0001	3.294E-05	0.0001	2.934E-04	0.0006
Ra-226	4.767E-01	0.9894	2.924E-05	0.0001	0.000E+00	0.0000	3.289E-03	0.0068	8.885E-06	0.0000	2.734E-05	0.0001	6.987E-05	0.0001
Total	4.770E-01	0.9901	9.624E-05	0.0002	0.000E+00	0.0000	4.206E-03	0.0087	3.351E-05	0.0001	6.028E-05	0.0001	3.633E-04	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.669E-03	0.0035
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.801E-01	0.9965
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.817E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.129E-04	0.0007	6.229E-05	0.0001	0.000E+00	0.0000	8.521E-04	0.0018	2.289E-05	0.0000	3.063E-05	0.0001	2.728E-04	0.0006
Ra-226	4.735E-01	0.9895	3.297E-05	0.0001	0.000E+00	0.0000	3.314E-03	0.0069	1.027E-05	0.0000	2.906E-05	0.0001	8.675E-05	0.0002
Total	4.738E-01	0.9901	9.527E-05	0.0002	0.000E+00	0.0000	4.166E-03	0.0087	3.316E-05	0.0001	5.968E-05	0.0001	3.595E-04	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.554E-03	0.0032
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.770E-01	0.9968
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.785E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.472E-04	0.0005	4.824E-05	0.0001	0.000E+00	0.0000	6.598E-04	0.0014	1.772E-05	0.0000	2.371E-05	0.0001	2.112E-04	0.0005
Ra-226	4.625E-01	0.9897	4.368E-05	0.0001	0.000E+00	0.0000	3.369E-03	0.0072	1.427E-05	0.0000	3.391E-05	0.0001	1.355E-04	0.0003
Total	4.627E-01	0.9902	9.192E-05	0.0002	0.000E+00	0.0000	4.029E-03	0.0086	3.199E-05	0.0001	5.763E-05	0.0001	3.467E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.208E-03	0.0026
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.661E-01	0.9974
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.673E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.259E-04	0.0003	2.312E-05	0.0001	0.000E+00	0.0000	3.162E-04	0.0007	8.494E-06	0.0000	1.136E-05	0.0000	1.012E-04	0.0002
Ra-226	4.306E-01	0.9902	5.973E-05	0.0001	0.000E+00	0.0000	3.332E-03	0.0077	2.033E-05	0.0000	4.065E-05	0.0001	2.109E-04	0.0005
Total	4.307E-01	0.9905	8.285E-05	0.0002	0.000E+00	0.0000	3.648E-03	0.0084	2.882E-05	0.0001	5.201E-05	0.0001	3.122E-04	0.0007

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.863E-04	0.0013
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.342E-01	0.9987
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.348E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.165E-05	0.0000	1.628E-06	0.0000	0.000E+00	0.0000	2.226E-05	0.0001	5.981E-07	0.0000	8.002E-07	0.0000	7.127E-06	0.0000
Ra-226	3.138E-01	0.9914	5.245E-05	0.0002	0.000E+00	0.0000	2.370E-03	0.0075	1.821E-05	0.0001	3.320E-05	0.0001	1.964E-04	0.0006
Total	3.138E-01	0.9915	5.408E-05	0.0002	0.000E+00	0.0000	2.392E-03	0.0076	1.881E-05	0.0001	3.400E-05	0.0001	2.036E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.407E-05	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.165E-01	0.9999
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.165E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.730E-03	1.669E-03	1.554E-03	1.208E-03	5.863E-04	4.407E-05	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	4.816E-01	4.800E-01	4.768E-01	4.656E-01	4.333E-01	3.154E-01	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	4.284E-05	9.682E-05	1.958E-04	4.847E-04	9.552E-04	1.027E-03	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		4.816E-01	4.801E-01	4.770E-01	4.661E-01	4.342E-01	3.165E-01	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.445E+04	1.498E+04	1.609E+04	2.070E+04	4.264E+04	5.673E+05	*7.634E+13	*7.634E+13	
Ra-226	5.191E+01	5.208E+01	5.241E+01	5.364E+01	5.757E+01	7.900E+01	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.730E-03	1.445E+04	1.730E-03	1.445E+04
Ra-226	1.000E+00	0.000E+00	4.816E-01	5.191E+01	4.816E-01	5.191E+01

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.730E-03	1.669E-03	1.554E-03	1.208E-03	5.863E-04	4.407E-05	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	4.284E-05	9.682E-05	1.958E-04	4.847E-04	9.552E-04	1.027E-03	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		1.773E-03	1.766E-03	1.749E-03	1.693E-03	1.542E-03	1.071E-03	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	4.816E-01	4.800E-01	4.768E-01	4.656E-01	4.333E-01	3.154E-01	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.30 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.539E+00	1.534E+00	1.525E+00	1.492E+00	1.398E+00	1.047E+00	0.000E+00	0.000E+00
M(t):	6.155E-02	6.137E-02	6.100E-02	5.970E-02	5.593E-02	4.189E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 1.539E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.867E-04	0.0006	8.989E-05	0.0001	0.000E+00	0.0000	9.506E-03	0.0062	2.553E-04	0.0002	3.416E-04	0.0002	3.043E-03	0.0020
Ra-226	1.491E+00	0.9688	3.524E-05	0.0000	0.000E+00	0.0000	3.274E-02	0.0213	8.139E-05	0.0001	2.641E-04	0.0002	6.088E-04	0.0004
Total	1.492E+00	0.9695	1.251E-04	0.0001	0.000E+00	0.0000	4.224E-02	0.0275	3.367E-04	0.0002	6.058E-04	0.0004	3.652E-03	0.0024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.422E-02	0.0092
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.525E+00	0.9908
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.539E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.543E-04	0.0006	8.667E-05	0.0001	0.000E+00	0.0000	9.166E-03	0.0060	2.462E-04	0.0002	3.294E-04	0.0002	2.934E-03	0.0019
Ra-226	1.486E+00	0.9689	3.782E-05	0.0000	0.000E+00	0.0000	3.289E-02	0.0214	8.885E-05	0.0001	2.734E-04	0.0002	6.987E-04	0.0005
Total	1.487E+00	0.9695	1.245E-04	0.0001	0.000E+00	0.0000	4.206E-02	0.0274	3.351E-04	0.0002	6.028E-04	0.0004	3.633E-03	0.0024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.372E-02	0.0089
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.520E+00	0.9911
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.534E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	8.926E-04	0.0006	8.058E-05	0.0001	0.000E+00	0.0000	8.521E-03	0.0056	2.289E-04	0.0002	3.063E-04	0.0002	2.728E-03	0.0018
Ra-226	1.478E+00	0.9690	4.265E-05	0.0000	0.000E+00	0.0000	3.314E-02	0.0217	1.027E-04	0.0001	2.906E-04	0.0002	8.675E-04	0.0006
Total	1.479E+00	0.9696	1.232E-04	0.0001	0.000E+00	0.0000	4.166E-02	0.0273	3.316E-04	0.0002	5.968E-04	0.0004	3.595E-03	0.0024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.276E-02	0.0084
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.512E+00	0.9916
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.525E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.064E-04	0.0005	6.240E-05	0.0000	0.000E+00	0.0000	6.598E-03	0.0044	1.772E-04	0.0001	2.371E-04	0.0002	2.112E-03	0.0014
Ra-226	1.447E+00	0.9695	5.650E-05	0.0000	0.000E+00	0.0000	3.369E-02	0.0226	1.427E-04	0.0001	3.391E-04	0.0002	1.355E-03	0.0009
Total	1.448E+00	0.9700	1.189E-04	0.0001	0.000E+00	0.0000	4.029E-02	0.0270	3.199E-04	0.0002	5.763E-04	0.0004	3.467E-03	0.0023

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.894E-03	0.0066
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.483E+00	0.9934
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.492E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.617E-04	0.0003	2.990E-05	0.0000	0.000E+00	0.0000	3.162E-03	0.0023	8.494E-05	0.0001	1.136E-04	0.0001	1.012E-03	0.0007
Ra-226	1.357E+00	0.9708	7.726E-05	0.0001	0.000E+00	0.0000	3.332E-02	0.0238	2.033E-04	0.0001	4.065E-04	0.0003	2.109E-03	0.0015
Total	1.358E+00	0.9710	1.072E-04	0.0001	0.000E+00	0.0000	3.648E-02	0.0261	2.882E-04	0.0002	5.201E-04	0.0004	3.122E-03	0.0022

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.764E-03	0.0034
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.394E+00	0.9966
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.398E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.404E-05	0.0000	2.105E-06	0.0000	0.000E+00	0.0000	2.226E-04	0.0002	5.981E-06	0.0000	8.002E-06	0.0000	7.127E-05	0.0001
Ra-226	1.021E+00	0.9746	6.785E-05	0.0001	0.000E+00	0.0000	2.370E-02	0.0226	1.821E-04	0.0002	3.320E-04	0.0003	1.964E-03	0.0019
Total	1.021E+00	0.9746	6.996E-05	0.0001	0.000E+00	0.0000	2.392E-02	0.0228	1.881E-04	0.0002	3.400E-04	0.0003	2.036E-03	0.0019

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.440E-04	0.0003
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.047E+00	0.9997
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.047E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.422E-02	1.372E-02	1.276E-02	9.894E-03	4.764E-03	3.440E-04	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	1.524E+00	1.520E+00	1.511E+00	1.479E+00	1.386E+00	1.039E+00	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	3.803E-04	8.262E-04	1.638E-03	4.000E-03	7.790E-03	8.039E-03	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		1.525E+00	1.520E+00	1.512E+00	1.483E+00	1.394E+00	1.047E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.758E+03	1.823E+03	1.960E+03	2.527E+03	5.247E+03	7.267E+04	*7.634E+13	*7.634E+13	
Ra-226	1.640E+01	1.644E+01	1.653E+01	1.686E+01	1.794E+01	2.388E+01	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.422E-02	1.758E+03	1.422E-02	1.758E+03
Ra-226	1.000E+00	0.000E+00	1.525E+00	1.640E+01	1.525E+00	1.640E+01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.422E-02	1.372E-02	1.276E-02	9.894E-03	4.764E-03	3.440E-04	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	3.803E-04	8.262E-04	1.638E-03	4.000E-03	7.790E-03	8.039E-03	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		1.460E-02	1.454E-02	1.440E-02	1.389E-02	1.255E-02	8.383E-03	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	1.524E+00	1.520E+00	1.511E+00	1.479E+00	1.386E+00	1.039E+00	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.39 seconds

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 2.621E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.322E-03	0.0005	1.159E-04	0.0000	0.000E+00	0.0000	9.506E-02	0.0363	2.553E-03	0.0010	3.416E-03	0.0013	3.043E-02	0.0116
Ra-226	2.151E+00	0.8207	4.544E-05	0.0000	0.000E+00	0.0000	3.274E-01	0.1249	8.139E-04	0.0003	2.641E-03	0.0010	6.088E-03	0.0023
Total	2.152E+00	0.8212	1.613E-04	0.0001	0.000E+00	0.0000	4.224E-01	0.1612	3.367E-03	0.0013	6.058E-03	0.0023	3.652E-02	0.0139

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.329E-01	0.0507
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.488E+00	0.9493
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.621E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Surface Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.279E-03	0.0005	1.118E-04	0.0000	0.000E+00	0.0000	9.166E-02	0.0351	2.462E-03	0.0009	3.294E-03	0.0013	2.934E-02	0.0112
Ra-226	2.146E+00	0.8211	4.876E-05	0.0000	0.000E+00	0.0000	3.289E-01	0.1258	8.885E-04	0.0003	2.734E-03	0.0010	6.987E-03	0.0027
Total	2.148E+00	0.8216	1.605E-04	0.0001	0.000E+00	0.0000	4.206E-01	0.1609	3.351E-03	0.0013	6.028E-03	0.0023	3.633E-02	0.0139

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.281E-01	0.0490
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.486E+00	0.9510
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.614E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.198E-03	0.0005	1.039E-04	0.0000	0.000E+00	0.0000	8.521E-02	0.0328	2.289E-03	0.0009	3.063E-03	0.0012	2.728E-02	0.0105
Ra-226	2.137E+00	0.8219	5.499E-05	0.0000	0.000E+00	0.0000	3.314E-01	0.1275	1.027E-03	0.0004	2.906E-03	0.0011	8.675E-03	0.0033
Total	2.138E+00	0.8223	1.589E-04	0.0001	0.000E+00	0.0000	4.166E-01	0.1602	3.316E-03	0.0013	5.968E-03	0.0023	3.595E-02	0.0138

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.191E-01	0.0458
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.481E+00	0.9542
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.600E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.518E-04	0.0004	8.045E-05	0.0000	0.000E+00	0.0000	6.598E-02	0.0258	1.772E-03	0.0007	2.371E-03	0.0009	2.112E-02	0.0083
Ra-226	2.105E+00	0.8246	7.285E-05	0.0000	0.000E+00	0.0000	3.369E-01	0.1320	1.427E-03	0.0006	3.391E-03	0.0013	1.355E-02	0.0053
Total	2.106E+00	0.8250	1.533E-04	0.0001	0.000E+00	0.0000	4.029E-01	0.1579	3.199E-03	0.0013	5.763E-03	0.0023	3.467E-02	0.0136

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.228E-02	0.0362
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.460E+00	0.9638
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.553E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.928E-04	0.0002	3.855E-05	0.0000	0.000E+00	0.0000	3.162E-02	0.0131	8.494E-04	0.0004	1.136E-03	0.0005	1.012E-02	0.0042
Ra-226	2.009E+00	0.8323	9.962E-05	0.0000	0.000E+00	0.0000	3.332E-01	0.1381	2.033E-03	0.0008	4.065E-03	0.0017	2.109E-02	0.0087
Total	2.009E+00	0.8325	1.382E-04	0.0001	0.000E+00	0.0000	3.648E-01	0.1512	2.882E-03	0.0012	5.201E-03	0.0022	3.122E-02	0.0129

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.426E-02	0.0183
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.369E+00	0.9817
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.413E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.818E-05	0.0000	2.714E-06	0.0000	0.000E+00	0.0000	2.226E-03	0.0012	5.981E-05	0.0000	8.002E-05	0.0000	7.127E-04	0.0004
Ra-226	1.611E+00	0.8588	8.749E-05	0.0000	0.000E+00	0.0000	2.370E-01	0.1263	1.821E-03	0.0010	3.320E-03	0.0018	1.964E-02	0.0105
Total	1.612E+00	0.8588	9.020E-05	0.0000	0.000E+00	0.0000	2.392E-01	0.1275	1.881E-03	0.0010	3.400E-03	0.0018	2.036E-02	0.0108

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.130E-03	0.0017
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.873E+00	0.9983
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.876E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	1.329E-01	1.281E-01	1.191E-01	9.228E-02	4.426E-02	3.130E-03	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	2.484E+00	2.478E+00	2.466E+00	2.423E+00	2.297E+00	1.800E+00	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	3.658E-03	7.832E-03	1.541E-02	3.742E-02	7.247E-02	7.322E-02	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		2.488E+00	2.486E+00	2.481E+00	2.460E+00	2.369E+00	1.873E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.881E+02	1.951E+02	2.098E+02	2.709E+02	5.648E+02	7.987E+03	*7.634E+13	*7.634E+13	
Ra-226	1.005E+01	1.006E+01	1.008E+01	1.016E+01	1.055E+01	1.335E+01	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	1.329E-01	1.881E+02	1.329E-01	1.881E+02
Ra-226	1.000E+00	0.000E+00	2.488E+00	1.005E+01	2.488E+00	1.005E+01

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.329E-01	1.281E-01	1.191E-01	9.228E-02	4.426E-02	3.130E-03	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	3.658E-03	7.832E-03	1.541E-02	3.742E-02	7.247E-02	7.322E-02	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		1.366E-01	1.360E-01	1.346E-01	1.297E-01	1.167E-01	7.635E-02	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	2.484E+00	2.478E+00	2.466E+00	2.423E+00	2.297E+00	1.800E+00	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.39 seconds

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Total Dose Components	
Time = 0.000E+00	9
Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
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Summary : Hematite - Surface Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.337E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 3.979E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.421E-03	0.0004	1.488E-04	0.0000	0.000E+00	0.0000	3.169E-01	0.0796	2.553E-02	0.0064	3.416E-02	0.0086	1.014E-01	0.0255
Ra-226	2.353E+00	0.5914	5.835E-05	0.0000	0.000E+00	0.0000	1.091E+00	0.2743	8.139E-03	0.0020	2.641E-02	0.0066	2.029E-02	0.0051
Total	2.355E+00	0.5918	2.072E-04	0.0001	0.000E+00	0.0000	1.408E+00	0.3539	3.367E-02	0.0085	6.058E-02	0.0152	1.217E-01	0.0306

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.796E-01	0.1205
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.499E+00	0.8795
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.979E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.375E-03	0.0003	1.435E-04	0.0000	0.000E+00	0.0000	3.055E-01	0.0770	2.462E-02	0.0062	3.294E-02	0.0083	9.781E-02	0.0247
Ra-226	2.349E+00	0.5921	6.261E-05	0.0000	0.000E+00	0.0000	1.096E+00	0.2763	8.885E-03	0.0022	2.734E-02	0.0069	2.329E-02	0.0059
Total	2.351E+00	0.5924	2.061E-04	0.0001	0.000E+00	0.0000	1.402E+00	0.3534	3.351E-02	0.0084	6.028E-02	0.0152	1.211E-01	0.0305

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.624E-01	0.1165
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.505E+00	0.8835
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.288E-03	0.0003	1.334E-04	0.0000	0.000E+00	0.0000	2.840E-01	0.0720	2.289E-02	0.0058	3.063E-02	0.0078	9.093E-02	0.0231
Ra-226	2.341E+00	0.5936	7.061E-05	0.0000	0.000E+00	0.0000	1.105E+00	0.2801	1.027E-02	0.0026	2.906E-02	0.0074	2.892E-02	0.0073
Total	2.342E+00	0.5939	2.040E-04	0.0001	0.000E+00	0.0000	1.389E+00	0.3521	3.316E-02	0.0084	5.968E-02	0.0151	1.198E-01	0.0304

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.299E-01	0.1090
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.514E+00	0.8910
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.025E-03	0.0003	1.033E-04	0.0000	0.000E+00	0.0000	2.199E-01	0.0570	1.772E-02	0.0046	2.371E-02	0.0061	7.041E-02	0.0182
Ra-226	2.312E+00	0.5987	9.354E-05	0.0000	0.000E+00	0.0000	1.123E+00	0.2909	1.427E-02	0.0037	3.391E-02	0.0088	4.516E-02	0.0117
Total	2.313E+00	0.5990	1.968E-04	0.0001	0.000E+00	0.0000	1.343E+00	0.3478	3.199E-02	0.0083	5.763E-02	0.0149	1.156E-01	0.0299

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.329E-01	0.0862
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.528E+00	0.9138
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.861E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.323E-04	0.0001	4.950E-05	0.0000	0.000E+00	0.0000	1.054E-01	0.0291	8.494E-03	0.0023	1.136E-02	0.0031	3.374E-02	0.0093
Ra-226	2.223E+00	0.6133	1.279E-04	0.0000	0.000E+00	0.0000	1.111E+00	0.3064	2.033E-02	0.0056	4.065E-02	0.0112	7.032E-02	0.0194
Total	2.223E+00	0.6135	1.774E-04	0.0000	0.000E+00	0.0000	1.216E+00	0.3355	2.882E-02	0.0080	5.201E-02	0.0144	1.041E-01	0.0287

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.596E-01	0.0440
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.465E+00	0.9560
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.624E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.264E-05	0.0000	3.485E-06	0.0000	0.000E+00	0.0000	7.422E-03	0.0027	5.981E-04	0.0002	8.002E-04	0.0003	2.376E-03	0.0009
Ra-226	1.833E+00	0.6663	1.123E-04	0.0000	0.000E+00	0.0000	7.899E-01	0.2871	1.821E-02	0.0066	3.320E-02	0.0121	6.548E-02	0.0238
Total	1.833E+00	0.6663	1.158E-04	0.0000	0.000E+00	0.0000	7.974E-01	0.2898	1.881E-02	0.0068	3.400E-02	0.0124	6.786E-02	0.0247

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.125E-02	0.0041
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.740E+00	0.9959
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.751E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	4.796E-01	4.624E-01	4.299E-01	3.329E-01	1.596E-01	1.125E-02	0.000E+00	0.000E+00
Ra-226+D	Ra-226+D	1.000E+00	3.487E+00	3.477E+00	3.459E+00	3.394E+00	3.204E+00	2.477E+00	0.000E+00	0.000E+00
Ra-226+D	Pb-210+D	1.000E+00	1.282E-02	2.785E-02	5.520E-02	1.346E-01	2.610E-01	2.630E-01	0.000E+00	0.000E+00
Ra-226+D	ΣDSR(j)		3.499E+00	3.505E+00	3.514E+00	3.528E+00	3.465E+00	2.740E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	5.213E+01	5.406E+01	5.815E+01	7.509E+01	1.567E+02	2.222E+03	*7.634E+13	*7.634E+13	
Ra-226	7.144E+00	7.132E+00	7.114E+00	7.085E+00	7.215E+00	9.124E+00	*9.885E+11	*9.885E+11	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	4.796E-01	5.213E+01	4.796E-01	5.213E+01
Ra-226	1.000E+00	10.87 ± 0.02	3.529E+00	7.085E+00	3.499E+00	7.144E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	4.796E-01	4.624E-01	4.299E-01	3.329E-01	1.596E-01	1.125E-02	0.000E+00	0.000E+00
Pb-210	Ra-226	1.000E+00	1.282E-02	2.785E-02	5.520E-02	1.346E-01	2.610E-01	2.630E-01	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)		4.924E-01	4.903E-01	4.851E-01	4.675E-01	4.205E-01	2.743E-01	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	3.487E+00	3.477E+00	3.459E+00	3.394E+00	3.204E+00	2.477E+00	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.681E-01	9.073E-01	7.231E-01	3.781E-01	3.909E-02	5.971E-05	8.321E-15
Pb-210	Ra-226	1.000E+00	0.000E+00	3.058E-02	8.879E-02	2.648E-01	5.909E-01	8.873E-01	8.349E-01	5.826E-01
Pb-210	ΣS(j):		1.000E+00	9.987E-01	9.961E-01	9.879E-01	9.690E-01	9.264E-01	8.350E-01	5.826E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.995E-01	9.985E-01	9.949E-01	9.847E-01	9.499E-01	8.571E-01	5.981E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.36 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 2.954E-01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.336E-01	0.4521	1.565E-04	0.0005	0.000E+00	0.0000	1.120E-03	0.0038	2.680E-06	0.0000	8.871E-06	0.0000	2.102E-05	0.0001
Th-228	1.475E-01	0.4993	7.795E-04	0.0026	0.000E+00	0.0000	7.453E-06	0.0000	9.847E-08	0.0000	1.745E-08	0.0000	9.611E-06	0.0000
Th-232	7.690E-03	0.0260	4.419E-03	0.0150	0.000E+00	0.0000	9.460E-05	0.0003	5.357E-07	0.0000	5.875E-07	0.0000	3.993E-05	0.0001
Total	2.888E-01	0.9775	5.355E-03	0.0181	0.000E+00	0.0000	1.222E-03	0.0041	3.314E-06	0.0000	9.476E-06	0.0000	7.056E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.349E-01	0.4566
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.483E-01	0.5020
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.224E-02	0.0414
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.954E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.600E-01	0.5433	3.596E-04	0.0012	0.000E+00	0.0000	9.916E-04	0.0034	2.396E-06	0.0000	7.836E-06	0.0000	2.129E-05	0.0001
Th-228	1.024E-01	0.3475	5.404E-04	0.0018	0.000E+00	0.0000	5.167E-06	0.0000	6.827E-08	0.0000	1.210E-08	0.0000	6.663E-06	0.0000
Th-232	2.553E-02	0.0867	4.433E-03	0.0151	0.000E+00	0.0000	2.207E-04	0.0007	8.365E-07	0.0000	1.586E-06	0.0000	4.233E-05	0.0001
Total	2.879E-01	0.9775	5.333E-03	0.0181	0.000E+00	0.0000	1.218E-03	0.0041	3.301E-06	0.0000	9.435E-06	0.0000	7.028E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.614E-01	0.5479
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.029E-01	0.3494
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.023E-02	0.1026
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.945E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.709E-01	0.5838	5.222E-04	0.0018	0.000E+00	0.0000	7.751E-04	0.0026	1.898E-06	0.0000	6.113E-06	0.0000	1.957E-05	0.0001
Th-228	4.928E-02	0.1684	2.597E-04	0.0009	0.000E+00	0.0000	2.483E-06	0.0000	3.281E-08	0.0000	5.814E-09	0.0000	3.202E-06	0.0000
Th-232	6.596E-02	0.2254	4.508E-03	0.0154	0.000E+00	0.0000	4.300E-04	0.0015	1.343E-06	0.0000	3.239E-06	0.0000	4.693E-05	0.0002
Total	2.861E-01	0.9775	5.290E-03	0.0181	0.000E+00	0.0000	1.208E-03	0.0041	3.274E-06	0.0000	9.358E-06	0.0000	6.971E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.722E-01	0.5883
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.955E-02	0.1693
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.095E-02	0.2424
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.927E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.721E-02	0.3396	3.507E-04	0.0012	0.000E+00	0.0000	3.250E-04	0.0011	8.094E-07	0.0000	2.556E-06	0.0000	9.809E-06	0.0000
Th-228	3.816E-03	0.0133	1.997E-05	0.0001	0.000E+00	0.0000	1.910E-07	0.0000	2.524E-09	0.0000	4.471E-10	0.0000	2.463E-07	0.0000
Th-232	1.789E-01	0.6248	4.769E-03	0.0167	0.000E+00	0.0000	8.478E-04	0.0030	2.368E-06	0.0000	6.533E-06	0.0000	5.766E-05	0.0002
Total	2.799E-01	0.9777	5.139E-03	0.0180	0.000E+00	0.0000	1.173E-03	0.0041	3.180E-06	0.0000	9.089E-06	0.0000	6.772E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.790E-02	0.3420
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.836E-03	0.0134
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.845E-01	0.6446
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.863E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.624E-03	0.0322	3.124E-05	0.0001	0.000E+00	0.0000	2.670E-05	0.0001	6.677E-08	0.0000	2.099E-07	0.0000	8.354E-07	0.0000
Th-228	2.542E-06	0.0000	1.305E-08	0.0000	0.000E+00	0.0000	1.247E-10	0.0000	1.648E-12	0.0000	2.920E-13	0.0000	1.609E-10	0.0000
Th-232	2.532E-01	0.9459	4.678E-03	0.0175	0.000E+00	0.0000	1.048E-03	0.0039	2.847E-06	0.0000	8.118E-06	0.0000	6.121E-05	0.0002
Total	2.619E-01	0.9781	4.709E-03	0.0176	0.000E+00	0.0000	1.075E-03	0.0040	2.914E-06	0.0000	8.327E-06	0.0000	6.204E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.683E-03	0.0324
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.555E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.590E-01	0.9676
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.677E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.375E-06	0.0000	4.581E-09	0.0000	0.000E+00	0.0000	3.914E-09	0.0000	9.788E-12	0.0000	3.076E-11	0.0000	1.225E-10	0.0000
Th-228	1.811E-17	0.0000	8.585E-20	0.0000	0.000E+00	0.0000	8.209E-22	0.0000	1.085E-23	0.0000	1.922E-24	0.0000	1.059E-21	0.0000
Th-232	1.939E-01	0.9799	3.205E-03	0.0162	0.000E+00	0.0000	7.314E-04	0.0037	1.983E-06	0.0000	5.668E-06	0.0000	4.222E-05	0.0002
Total	1.939E-01	0.9799	3.205E-03	0.0162	0.000E+00	0.0000	7.314E-04	0.0037	1.983E-06	0.0000	5.668E-06	0.0000	4.223E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.383E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.820E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.979E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.979E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.076E-01	9.506E-02	7.424E-02	3.125E-02	2.625E-03	4.215E-07	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	2.733E-02	6.633E-02	9.796E-02	6.665E-02	6.058E-03	9.617E-07	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		1.349E-01	1.614E-01	1.722E-01	9.790E-02	8.683E-03	1.383E-06	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.483E-01	1.029E-01	4.955E-02	3.836E-03	2.555E-06	1.820E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	4.497E-03	4.479E-03	4.443E-03	4.316E-03	3.956E-03	2.695E-03	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	6.605E-03	1.876E-02	3.890E-02	7.950E-02	1.012E-01	7.741E-02	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	1.142E-03	6.990E-03	2.761E-02	1.007E-01	1.539E-01	1.178E-01	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		1.224E-02	3.023E-02	7.095E-02	1.845E-01	2.590E-01	1.979E-01	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.853E+02	1.549E+02	1.452E+02	2.554E+02	2.879E+03	1.807E+07	*2.726E+14	*2.726E+14	
Th-228	1.686E+02	2.429E+02	5.045E+02	6.517E+03	9.785E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	2.042E+03	8.269E+02	3.523E+02	1.355E+02	9.651E+01	1.263E+02	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.519 ± 0.005	1.730E-01	1.445E+02	1.349E-01	1.853E+02
Th-228	1.000E+00	0.000E+00	1.483E-01	1.686E+02	1.483E-01	1.686E+02
Th-232	1.000E+00	31.09 ± 0.06	2.591E-01	9.649E+01	1.224E-02	2.042E+03

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.076E-01	9.506E-02	7.424E-02	3.125E-02	2.625E-03	4.215E-07	0.000E+00 0.000E+00
Ra-228	Th-232	1.000E+00		6.605E-03	1.876E-02	3.890E-02	7.950E-02	1.012E-01	7.741E-02	0.000E+00 0.000E+00
Ra-228	ΣDOSE(j)			1.142E-01	1.138E-01	1.131E-01	1.107E-01	1.038E-01	7.741E-02	0.000E+00 0.000E+00
Th-228	Ra-228	1.000E+00		2.733E-02	6.633E-02	9.796E-02	6.665E-02	6.058E-03	9.617E-07	0.000E+00 0.000E+00
Th-228	Th-228	1.000E+00		1.483E-01	1.029E-01	4.955E-02	3.836E-03	2.555E-06	1.820E-17	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.142E-03	6.990E-03	2.761E-02	1.007E-01	1.539E-01	1.178E-01	0.000E+00 0.000E+00
Th-228	ΣDOSE(j)			1.768E-01	1.762E-01	1.751E-01	1.712E-01	1.599E-01	1.178E-01	0.000E+00 0.000E+00
Th-232	Th-232	1.000E+00		4.497E-03	4.479E-03	4.443E-03	4.316E-03	3.956E-03	2.695E-03	0.000E+00 0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01 9.886E-01
Ra-228	ΣS(j):			1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01 9.886E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01 9.886E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01 9.886E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01 9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.49 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 1.447E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.601E-01	0.4562	2.027E-04	0.0001	0.000E+00	0.0000	1.120E-02	0.0077	2.680E-05	0.0000	8.871E-05	0.0001	2.102E-04	0.0001
Th-228	7.287E-01	0.5037	1.010E-03	0.0007	0.000E+00	0.0000	7.453E-05	0.0001	9.847E-07	0.0000	1.745E-07	0.0000	9.611E-05	0.0001
Th-232	3.799E-02	0.0263	5.723E-03	0.0040	0.000E+00	0.0000	9.460E-04	0.0007	5.357E-06	0.0000	5.875E-06	0.0000	3.993E-04	0.0003
Total	1.427E+00	0.9862	6.936E-03	0.0048	0.000E+00	0.0000	1.222E-02	0.0084	3.314E-05	0.0000	9.476E-05	0.0001	7.056E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.718E-01	0.4644
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.299E-01	0.5045
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.507E-02	0.0312
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.447E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.908E-01	0.5481	4.658E-04	0.0003	0.000E+00	0.0000	9.916E-03	0.0069	2.396E-05	0.0000	7.836E-05	0.0001	2.129E-04	0.0001
Th-228	5.058E-01	0.3506	6.999E-04	0.0005	0.000E+00	0.0000	5.167E-05	0.0000	6.827E-07	0.0000	1.210E-07	0.0000	6.663E-05	0.0000
Th-232	1.262E-01	0.0875	5.742E-03	0.0040	0.000E+00	0.0000	2.208E-03	0.0015	8.365E-06	0.0000	1.586E-05	0.0000	4.233E-04	0.0003
Total	1.423E+00	0.9862	6.908E-03	0.0048	0.000E+00	0.0000	1.218E-02	0.0084	3.301E-05	0.0000	9.435E-05	0.0001	7.028E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.015E-01	0.5556
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.066E-01	0.3511
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.346E-01	0.0933
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.443E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.448E-01	0.5890	6.764E-04	0.0005	0.000E+00	0.0000	7.751E-03	0.0054	1.898E-05	0.0000	6.113E-05	0.0000	1.957E-04	0.0001
Th-228	2.436E-01	0.1699	3.364E-04	0.0002	0.000E+00	0.0000	2.483E-05	0.0000	3.281E-07	0.0000	5.814E-08	0.0000	3.202E-05	0.0000
Th-232	3.261E-01	0.2274	5.839E-03	0.0041	0.000E+00	0.0000	4.300E-03	0.0030	1.343E-05	0.0000	3.239E-05	0.0000	4.693E-04	0.0003
Total	1.415E+00	0.9862	6.852E-03	0.0048	0.000E+00	0.0000	1.208E-02	0.0084	3.274E-05	0.0000	9.358E-05	0.0001	6.971E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.535E-01	0.5951
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.440E-01	0.1701
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.368E-01	0.2348
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.434E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.812E-01	0.3426	4.543E-04	0.0003	0.000E+00	0.0000	3.250E-03	0.0023	8.094E-06	0.0000	2.556E-05	0.0000	9.809E-05	0.0001
Th-228	1.889E-02	0.0134	2.587E-05	0.0000	0.000E+00	0.0000	1.910E-06	0.0000	2.524E-08	0.0000	4.471E-09	0.0000	2.463E-06	0.0000
Th-232	8.856E-01	0.6303	6.176E-03	0.0044	0.000E+00	0.0000	8.478E-03	0.0060	2.368E-05	0.0000	6.533E-05	0.0000	5.766E-04	0.0004
Total	1.386E+00	0.9863	6.657E-03	0.0047	0.000E+00	0.0000	1.173E-02	0.0083	3.180E-05	0.0000	9.089E-05	0.0001	6.772E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.851E-01	0.3453
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.892E-02	0.0135
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.009E-01	0.6412
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.405E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.287E-02	0.0325	4.046E-05	0.0000	0.000E+00	0.0000	2.670E-04	0.0002	6.677E-07	0.0000	2.099E-06	0.0000	8.354E-06	0.0000
Th-228	1.263E-05	0.0000	1.690E-08	0.0000	0.000E+00	0.0000	1.247E-09	0.0000	1.648E-11	0.0000	2.920E-12	0.0000	1.609E-09	0.0000
Th-232	1.259E+00	0.9542	6.059E-03	0.0046	0.000E+00	0.0000	1.048E-02	0.0079	2.847E-05	0.0000	8.118E-05	0.0001	6.121E-04	0.0005
Total	1.302E+00	0.9867	6.099E-03	0.0046	0.000E+00	0.0000	1.075E-02	0.0081	2.914E-05	0.0000	8.327E-05	0.0001	6.204E-04	0.0005

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.319E-02	0.0327
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.265E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.276E+00	0.9673
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.320E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.957E-06	0.0000	5.933E-09	0.0000	0.000E+00	0.0000	3.914E-08	0.0000	9.788E-11	0.0000	3.076E-10	0.0000	1.225E-09	0.0000
Th-228	9.157E-17	0.0000	1.112E-19	0.0000	0.000E+00	0.0000	8.210E-21	0.0000	1.085E-22	0.0000	1.922E-23	0.0000	1.059E-20	0.0000
Th-232	9.818E-01	0.9880	4.151E-03	0.0042	0.000E+00	0.0000	7.314E-03	0.0074	1.983E-05	0.0000	5.668E-05	0.0001	4.222E-04	0.0004
Total	9.818E-01	0.9880	4.151E-03	0.0042	0.000E+00	0.0000	7.314E-03	0.0074	1.983E-05	0.0000	5.668E-05	0.0001	4.223E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.003E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.170E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.938E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.938E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	5.373E-01	4.749E-01	3.711E-01	1.564E-01	1.319E-02	2.157E-06	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.346E-01	3.265E-01	4.824E-01	3.287E-01	3.000E-02	4.846E-06	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		6.718E-01	8.015E-01	8.535E-01	4.851E-01	4.319E-02	7.003E-06	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	7.299E-01	5.066E-01	2.440E-01	1.892E-02	1.265E-05	9.170E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	6.473E-03	6.447E-03	6.395E-03	6.214E-03	5.698E-03	3.892E-03	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	3.297E-02	9.373E-02	1.944E-01	3.979E-01	5.086E-01	3.961E-01	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	5.625E-03	3.441E-02	1.360E-01	4.968E-01	7.620E-01	5.937E-01	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		4.507E-02	1.346E-01	3.368E-01	9.009E-01	1.276E+00	9.938E-01	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	3.721E+01	3.119E+01	2.929E+01	5.154E+01	5.788E+02	3.570E+06	*2.726E+14	*2.726E+14	
Th-228	3.425E+01	4.935E+01	1.025E+02	1.322E+03	1.976E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	5.547E+02	1.858E+02	7.423E+01	2.775E+01	1.959E+01	2.516E+01	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.505 ± 0.005	8.579E-01	2.914E+01	6.718E-01	3.721E+01
Th-228	1.000E+00	0.000E+00	7.299E-01	3.425E+01	7.299E-01	3.425E+01
Th-232	1.000E+00	31.67 ± 0.06	1.277E+00	1.957E+01	4.507E-02	5.547E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		5.373E-01	4.749E-01	3.711E-01	1.564E-01	1.319E-02	2.157E-06	0.000E+00 0.000E+00
Ra-228	Th-232	1.000E+00		3.297E-02	9.373E-02	1.944E-01	3.979E-01	5.086E-01	3.961E-01	0.000E+00 0.000E+00
Ra-228	ΣDOSE(j)			5.702E-01	5.686E-01	5.654E-01	5.543E-01	5.218E-01	3.961E-01	0.000E+00 0.000E+00
Th-228	Ra-228	1.000E+00		1.346E-01	3.265E-01	4.824E-01	3.287E-01	3.000E-02	4.846E-06	0.000E+00 0.000E+00
Th-228	Th-228	1.000E+00		7.299E-01	5.066E-01	2.440E-01	1.892E-02	1.265E-05	9.170E-17	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		5.625E-03	3.441E-02	1.360E-01	4.968E-01	7.620E-01	5.937E-01	0.000E+00 0.000E+00
Th-228	ΣDOSE(j)			8.701E-01	8.675E-01	8.624E-01	8.444E-01	7.921E-01	5.937E-01	0.000E+00 0.000E+00
Th-232	Th-232	1.000E+00		6.473E-03	6.447E-03	6.395E-03	6.214E-03	5.698E-03	3.892E-03	0.000E+00 0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01 9.886E-01
Ra-228	ΣS(j):			1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01 9.886E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01 9.886E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01 9.886E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01 9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.70 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	100.00 square meters	Ra-228	1.000E+00
Thickness:	0.15 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.885E+00	2.878E+00	2.866E+00	2.821E+00	2.687E+00	2.144E+00	0.000E+00	0.000E+00
M(t):	1.154E-01	1.151E-01	1.146E-01	1.128E-01	1.075E-01	8.575E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 2.885E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.261E+00	0.4371	2.617E-04	0.0001	0.000E+00	0.0000	1.120E-01	0.0388	2.680E-04	0.0001	8.871E-04	0.0003	2.102E-03	0.0007
Th-228	1.412E+00	0.4894	1.304E-03	0.0005	0.000E+00	0.0000	7.454E-04	0.0003	9.847E-06	0.0000	1.745E-06	0.0000	9.611E-04	0.0003
Th-232	7.250E-02	0.0251	7.392E-03	0.0026	0.000E+00	0.0000	9.460E-03	0.0033	5.357E-05	0.0000	5.875E-05	0.0000	3.993E-03	0.0014
Total	2.745E+00	0.9516	8.957E-03	0.0031	0.000E+00	0.0000	1.222E-01	0.0424	3.314E-04	0.0001	9.476E-04	0.0003	7.056E-03	0.0024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.377E+00	0.4772
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.415E+00	0.4904
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.346E-02	0.0324
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.885E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.517E+00	0.5272	6.015E-04	0.0002	0.000E+00	0.0000	9.916E-02	0.0344	2.396E-04	0.0001	7.836E-04	0.0003	2.129E-03	0.0007
Th-228	9.805E-01	0.3406	9.039E-04	0.0003	0.000E+00	0.0000	5.167E-04	0.0002	6.827E-06	0.0000	1.210E-06	0.0000	6.663E-04	0.0002
Th-232	2.416E-01	0.0839	7.416E-03	0.0026	0.000E+00	0.0000	2.208E-02	0.0077	8.365E-05	0.0000	1.586E-04	0.0001	4.233E-03	0.0015
Total	2.739E+00	0.9517	8.921E-03	0.0031	0.000E+00	0.0000	1.218E-01	0.0423	3.301E-04	0.0001	9.435E-04	0.0003	7.028E-03	0.0024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.620E+00	0.5629
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.826E-01	0.3414
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.755E-01	0.0957
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.878E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.628E+00	0.5681	8.736E-04	0.0003	0.000E+00	0.0000	7.751E-02	0.0270	1.898E-04	0.0001	6.113E-04	0.0002	1.957E-03	0.0007
Th-228	4.730E-01	0.1650	4.344E-04	0.0002	0.000E+00	0.0000	2.483E-04	0.0001	3.281E-06	0.0000	5.814E-07	0.0000	3.202E-04	0.0001
Th-232	6.268E-01	0.2187	7.541E-03	0.0026	0.000E+00	0.0000	4.300E-02	0.0150	1.343E-04	0.0000	3.239E-04	0.0001	4.693E-03	0.0016
Total	2.728E+00	0.9519	8.849E-03	0.0031	0.000E+00	0.0000	1.208E-01	0.0421	3.274E-04	0.0001	9.358E-04	0.0003	6.971E-03	0.0024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.709E+00	0.5964
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.740E-01	0.1654
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.825E-01	0.2382
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.866E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.342E-01	0.3312	5.867E-04	0.0002	0.000E+00	0.0000	3.250E-02	0.0115	8.094E-05	0.0000	2.556E-04	0.0001	9.809E-04	0.0003
Th-228	3.686E-02	0.0131	3.341E-05	0.0000	0.000E+00	0.0000	1.910E-05	0.0000	2.524E-07	0.0000	4.471E-08	0.0000	2.463E-05	0.0000
Th-232	1.716E+00	0.6082	7.977E-03	0.0028	0.000E+00	0.0000	8.478E-02	0.0301	2.368E-04	0.0001	6.533E-04	0.0002	5.766E-03	0.0020
Total	2.687E+00	0.9525	8.597E-03	0.0030	0.000E+00	0.0000	1.173E-01	0.0416	3.180E-04	0.0001	9.089E-04	0.0003	6.772E-03	0.0024

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.686E-01	0.3434
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.694E-02	0.0131
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E+00	0.6435
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.821E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.457E-02	0.0315	5.225E-05	0.0000	0.000E+00	0.0000	2.670E-03	0.0010	6.677E-06	0.0000	2.099E-05	0.0000	8.354E-05	0.0000
Th-228	2.503E-05	0.0000	2.182E-08	0.0000	0.000E+00	0.0000	1.248E-08	0.0000	1.648E-10	0.0000	2.920E-11	0.0000	1.609E-08	0.0000
Th-232	2.480E+00	0.9229	7.825E-03	0.0029	0.000E+00	0.0000	1.048E-01	0.0390	2.847E-04	0.0001	8.118E-04	0.0003	6.121E-03	0.0023
Total	2.565E+00	0.9544	7.877E-03	0.0029	0.000E+00	0.0000	1.075E-01	0.0400	2.914E-04	0.0001	8.327E-04	0.0003	6.204E-03	0.0023

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.741E-02	0.0325
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.508E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.600E+00	0.9675
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.687E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.461E-05	0.0000	7.663E-09	0.0000	0.000E+00	0.0000	3.914E-07	0.0000	9.788E-10	0.0000	3.076E-09	0.0000	1.225E-08	0.0000
Th-228	1.928E-16	0.0000	1.436E-19	0.0000	0.000E+00	0.0000	8.210E-20	0.0000	1.085E-21	0.0000	1.922E-22	0.0000	1.059E-19	0.0000
Th-232	2.060E+00	0.9610	5.361E-03	0.0025	0.000E+00	0.0000	7.314E-02	0.0341	1.983E-04	0.0001	5.668E-04	0.0003	4.222E-03	0.0020
Total	2.060E+00	0.9611	5.361E-03	0.0025	0.000E+00	0.0000	7.314E-02	0.0341	1.983E-04	0.0001	5.668E-04	0.0003	4.223E-03	0.0020

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.502E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.931E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.144E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.144E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.115E+00	9.864E-01	7.717E-01	3.267E-01	2.793E-02	4.817E-06	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	2.614E-01	6.339E-01	9.375E-01	6.419E-01	5.948E-02	1.021E-05	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		1.377E+00	1.620E+00	1.709E+00	9.686E-01	8.741E-02	1.502E-05	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.415E+00	9.826E-01	4.740E-01	3.694E-02	2.508E-05	1.931E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.440E-02	1.435E-02	1.423E-02	1.383E-02	1.268E-02	8.659E-03	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	6.812E-02	1.943E-01	4.039E-01	8.308E-01	1.076E+00	8.843E-01	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	1.094E-02	6.686E-02	2.644E-01	9.703E-01	1.511E+00	1.251E+00	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		9.346E-02	2.755E-01	6.825E-01	1.815E+00	2.600E+00	2.144E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.816E+01	1.543E+01	1.463E+01	2.581E+01	2.860E+02	1.664E+06	*2.726E+14	*2.726E+14	
Th-228	1.767E+01	2.544E+01	5.275E+01	6.769E+02	9.968E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	2.675E+02	9.074E+01	3.663E+01	1.377E+01	9.615E+00	1.166E+01	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.431 ± 0.005	1.721E+00	1.453E+01	1.377E+00	1.816E+01
Th-228	1.000E+00	0.000E+00	1.415E+00	1.767E+01	1.415E+00	1.767E+01
Th-232	1.000E+00	33.60 ± 0.07	2.607E+00	9.591E+00	9.346E-02	2.675E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.115E+00	9.864E-01	7.717E-01	3.267E-01	2.793E-02	4.817E-06	0.000E+00 0.000E+00
Ra-228	Th-232	1.000E+00		6.812E-02	1.943E-01	4.039E-01	8.308E-01	1.076E+00	8.843E-01	0.000E+00 0.000E+00
Ra-228	ΣDOSE(j)			1.183E+00	1.181E+00	1.176E+00	1.157E+00	1.104E+00	8.843E-01	0.000E+00 0.000E+00
Th-228	Ra-228	1.000E+00		2.614E-01	6.339E-01	9.375E-01	6.419E-01	5.948E-02	1.021E-05	0.000E+00 0.000E+00
Th-228	Th-228	1.000E+00		1.415E+00	9.826E-01	4.740E-01	3.694E-02	2.508E-05	1.931E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.094E-02	6.686E-02	2.644E-01	9.703E-01	1.511E+00	1.251E+00	0.000E+00 0.000E+00
Th-228	ΣDOSE(j)			1.687E+00	1.683E+00	1.676E+00	1.649E+00	1.571E+00	1.251E+00	0.000E+00 0.000E+00
Th-232	Th-232	1.000E+00		1.440E-02	1.435E-02	1.423E-02	1.383E-02	1.268E-02	8.659E-03	0.000E+00 0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01 9.886E-01
Ra-228	ΣS(j):			1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01 9.886E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01 9.886E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01 9.886E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01 9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.59 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1000.00 square meters	Ra-228	1.000E+00
Thickness:	0.15 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.582E+00	4.572E+00	4.552E+00	4.480E+00	4.270E+00	3.412E+00	0.000E+00	0.000E+00
M(t):	1.833E-01	1.829E-01	1.821E-01	1.792E-01	1.708E-01	1.365E-01	0.000E+00	0.000E+00

Maximum TDOSE(t): 4.582E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.493E+00	0.3258	3.368E-04	0.0001	0.000E+00	0.0000	1.120E+00	0.2445	2.680E-03	0.0006	8.871E-03	0.0019	2.102E-02	0.0046
Th-228	1.687E+00	0.3681	1.678E-03	0.0004	0.000E+00	0.0000	7.454E-03	0.0016	9.847E-05	0.0000	1.745E-05	0.0000	9.611E-03	0.0021
Th-232	8.577E-02	0.0187	9.511E-03	0.0021	0.000E+00	0.0000	9.461E-02	0.0206	5.357E-04	0.0001	5.875E-04	0.0001	3.993E-02	0.0087
Total	3.265E+00	0.7126	1.153E-02	0.0025	0.000E+00	0.0000	1.222E+00	0.2667	3.314E-03	0.0007	9.476E-03	0.0021	7.056E-02	0.0154

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.646E+00	0.5774
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.706E+00	0.3722
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.309E-01	0.0504
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.582E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.802E+00	0.3941	7.740E-04	0.0002	0.000E+00	0.0000	9.916E-01	0.2169	2.396E-03	0.0005	7.836E-03	0.0017	2.129E-02	0.0047
Th-228	1.172E+00	0.2564	1.163E-03	0.0003	0.000E+00	0.0000	5.168E-03	0.0011	6.827E-05	0.0000	1.210E-05	0.0000	6.663E-03	0.0015
Th-232	2.863E-01	0.0626	9.542E-03	0.0021	0.000E+00	0.0000	2.208E-01	0.0483	8.365E-04	0.0002	1.586E-03	0.0003	4.233E-02	0.0093
Total	3.260E+00	0.7131	1.148E-02	0.0025	0.000E+00	0.0000	1.218E+00	0.2663	3.301E-03	0.0007	9.435E-03	0.0021	7.028E-02	0.0154

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.826E+00	0.6180
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.185E+00	0.2592
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.614E-01	0.1228
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.572E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.939E+00	0.4260	1.124E-03	0.0002	0.000E+00	0.0000	7.751E-01	0.1703	1.898E-03	0.0004	6.113E-03	0.0013	1.957E-02	0.0043
Th-228	5.662E-01	0.1244	5.590E-04	0.0001	0.000E+00	0.0000	2.484E-03	0.0005	3.281E-05	0.0000	5.814E-06	0.0000	3.202E-03	0.0007
Th-232	7.453E-01	0.1637	9.703E-03	0.0021	0.000E+00	0.0000	4.300E-01	0.0945	1.343E-03	0.0003	3.240E-03	0.0007	4.693E-02	0.0103
Total	3.251E+00	0.7141	1.139E-02	0.0025	0.000E+00	0.0000	1.208E+00	0.2653	3.274E-03	0.0007	9.358E-03	0.0021	6.971E-02	0.0153

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.743E+00	0.6026
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.725E-01	0.1258
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.237E+00	0.2716
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.552E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.119E+00	0.2498	7.549E-04	0.0002	0.000E+00	0.0000	3.250E-01	0.0725	8.094E-04	0.0002	2.556E-03	0.0006	9.809E-03	0.0022
Th-228	4.433E-02	0.0099	4.299E-05	0.0000	0.000E+00	0.0000	1.910E-04	0.0000	2.524E-06	0.0000	4.471E-07	0.0000	2.463E-04	0.0001
Th-232	2.053E+00	0.4581	1.026E-02	0.0023	0.000E+00	0.0000	8.478E-01	0.1892	2.368E-03	0.0005	6.533E-03	0.0015	5.766E-02	0.0129
Total	3.216E+00	0.7179	1.106E-02	0.0025	0.000E+00	0.0000	1.173E+00	0.2618	3.180E-03	0.0007	9.089E-03	0.0020	6.772E-02	0.0151

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.458E+00	0.3255
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.481E-02	0.0100
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.977E+00	0.6645
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.480E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.027E-01	0.0241	6.723E-05	0.0000	0.000E+00	0.0000	2.670E-02	0.0063	6.677E-05	0.0000	2.099E-04	0.0000	8.354E-04	0.0002
Th-228	3.050E-05	0.0000	2.808E-08	0.0000	0.000E+00	0.0000	1.248E-07	0.0000	1.648E-09	0.0000	2.920E-10	0.0000	1.609E-07	0.0000
Th-232	3.009E+00	0.7047	1.007E-02	0.0024	0.000E+00	0.0000	1.048E+00	0.2454	2.847E-03	0.0007	8.118E-03	0.0019	6.121E-02	0.0143
Total	3.112E+00	0.7288	1.014E-02	0.0024	0.000E+00	0.0000	1.075E+00	0.2517	2.914E-03	0.0007	8.327E-03	0.0020	6.204E-02	0.0145

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.306E-01	0.0306
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.082E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.139E+00	0.9694
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.270E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.862E-05	0.0000	9.860E-09	0.0000	0.000E+00	0.0000	3.914E-06	0.0000	9.788E-09	0.0000	3.076E-08	0.0000	1.225E-07	0.0000
Th-228	2.466E-16	0.0000	1.848E-19	0.0000	0.000E+00	0.0000	8.211E-19	0.0000	1.085E-20	0.0000	1.922E-21	0.0000	1.059E-18	0.0000
Th-232	2.624E+00	0.7690	6.898E-03	0.0020	0.000E+00	0.0000	7.314E-01	0.2144	1.983E-03	0.0006	5.668E-03	0.0017	4.222E-02	0.0124
Total	2.624E+00	0.7690	6.898E-03	0.0020	0.000E+00	0.0000	7.314E-01	0.2144	1.983E-03	0.0006	5.668E-03	0.0017	4.223E-02	0.0124

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.271E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.486E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.412E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.412E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	2.325E+00	2.055E+00	1.606E+00	6.776E-01	5.735E-02	9.545E-06	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.210E-01	7.705E-01	1.137E+00	7.806E-01	7.324E-02	1.316E-05	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		2.646E+00	2.826E+00	2.743E+00	1.458E+00	1.306E-01	2.271E-05	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.706E+00	1.185E+00	5.725E-01	4.481E-02	3.082E-05	2.486E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	7.876E-02	7.845E-02	7.781E-02	7.560E-02	6.928E-02	4.719E-02	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	1.386E-01	4.012E-01	8.371E-01	1.720E+00	2.207E+00	1.750E+00	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	1.356E-02	8.175E-02	3.216E-01	1.182E+00	1.863E+00	1.614E+00	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		2.309E-01	5.614E-01	1.237E+00	2.977E+00	4.139E+00	3.412E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	9.449E+00	8.847E+00	9.114E+00	1.714E+01	1.914E+02	1.101E+06	*2.726E+14	*2.726E+14	
Th-228	1.466E+01	2.109E+01	4.367E+01	5.579E+02	8.113E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.083E+02	4.453E+01	2.022E+01	8.397E+00	6.040E+00	7.328E+00	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	1.563 ± 0.003	2.848E+00	8.779E+00	2.646E+00	9.449E+00
Th-228	1.000E+00	0.000E+00	1.706E+00	1.466E+01	1.706E+00	1.466E+01
Th-232	1.000E+00	33.12 ± 0.07	4.147E+00	6.029E+00	2.309E-01	1.083E+02

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	2.325E+00	2.055E+00	1.606E+00	6.776E-01	5.735E-02	9.545E-06	0.000E+00	0.000E+00
Ra-228	Th-232	1.000E+00	1.386E-01	4.012E-01	8.371E-01	1.720E+00	2.207E+00	1.750E+00	0.000E+00	0.000E+00
Ra-228	ΣDOSE(j)		2.463E+00	2.456E+00	2.443E+00	2.397E+00	2.264E+00	1.750E+00	0.000E+00	0.000E+00
Th-228	Ra-228	1.000E+00	3.210E-01	7.705E-01	1.137E+00	7.806E-01	7.324E-02	1.316E-05	0.000E+00	0.000E+00
Th-228	Th-228	1.000E+00	1.706E+00	1.185E+00	5.725E-01	4.481E-02	3.082E-05	2.486E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.356E-02	8.175E-02	3.216E-01	1.182E+00	1.863E+00	1.614E+00	0.000E+00	0.000E+00
Th-228	ΣDOSE(j)		2.040E+00	2.038E+00	2.031E+00	2.007E+00	1.936E+00	1.614E+00	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	7.876E-02	7.845E-02	7.781E-02	7.560E-02	6.928E-02	4.719E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01	9.886E-01
Ra-228	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01	9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.62 seconds

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Time = 3.000E+00	11
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Surface Th-232+C CSM - AF 10,000 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 10000.00 square meters	Ra-228 1.000E+00
Thickness: 0.15 meters	Th-228 1.000E+00
Cover Depth: 0.00 meters	Th-232 1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.844E+00	4.834E+00	4.813E+00	4.742E+00	4.530E+00	3.655E+00	0.000E+00	0.000E+00
M(t):	1.937E-01	1.934E-01	1.925E-01	1.897E-01	1.812E-01	1.462E-01	0.000E+00	0.000E+00

Maximum TDOSE(t): 4.844E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.557E+00	0.3214	4.313E-04	0.0001	0.000E+00	0.0000	1.120E+00	0.2313	2.680E-02	0.0055	8.871E-02	0.0183	2.102E-02	0.0043
Th-228	1.762E+00	0.3638	2.149E-03	0.0004	0.000E+00	0.0000	7.455E-03	0.0015	9.848E-04	0.0002	1.745E-04	0.0000	9.611E-03	0.0020
Th-232	8.944E-02	0.0185	1.218E-02	0.0025	0.000E+00	0.0000	9.461E-02	0.0195	5.357E-03	0.0011	5.875E-03	0.0012	3.993E-02	0.0082
Total	3.408E+00	0.7036	1.476E-02	0.0030	0.000E+00	0.0000	1.222E+00	0.2523	3.314E-02	0.0068	9.476E-02	0.0196	7.056E-02	0.0146

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.814E+00	0.5809
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.782E+00	0.3680
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.474E-01	0.0511
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.844E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.880E+00	0.3890	9.913E-04	0.0002	0.000E+00	0.0000	9.916E-01	0.2051	2.396E-02	0.0050	7.836E-02	0.0162	2.129E-02	0.0044
Th-228	1.225E+00	0.2534	1.490E-03	0.0003	0.000E+00	0.0000	5.168E-03	0.0011	6.827E-04	0.0001	1.210E-04	0.0000	6.663E-03	0.0014
Th-232	2.987E-01	0.0618	1.222E-02	0.0025	0.000E+00	0.0000	2.208E-01	0.0457	8.365E-03	0.0017	1.586E-02	0.0033	4.233E-02	0.0088
Total	3.404E+00	0.7042	1.470E-02	0.0030	0.000E+00	0.0000	1.218E+00	0.2519	3.301E-02	0.0068	9.435E-02	0.0195	7.028E-02	0.0145

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.997E+00	0.6199
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.239E+00	0.2563
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.983E-01	0.1238
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.834E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.025E+00	0.4208	1.440E-03	0.0003	0.000E+00	0.0000	7.751E-01	0.1610	1.898E-02	0.0039	6.113E-02	0.0127	1.957E-02	0.0041
Th-228	5.919E-01	0.1230	7.159E-04	0.0001	0.000E+00	0.0000	2.484E-03	0.0005	3.281E-04	0.0001	5.814E-05	0.0000	3.202E-03	0.0007
Th-232	7.781E-01	0.1617	1.243E-02	0.0026	0.000E+00	0.0000	4.300E-01	0.0893	1.343E-02	0.0028	3.240E-02	0.0067	4.693E-02	0.0098
Total	3.395E+00	0.7054	1.458E-02	0.0030	0.000E+00	0.0000	1.208E+00	0.2509	3.274E-02	0.0068	9.358E-02	0.0194	6.971E-02	0.0145

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E+00	0.6028
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.987E-01	0.1244
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.313E+00	0.2728
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.813E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.171E+00	0.2470	9.668E-04	0.0002	0.000E+00	0.0000	3.250E-01	0.0685	8.094E-03	0.0017	2.556E-02	0.0054	9.809E-03	0.0021
Th-228	4.640E-02	0.0098	5.506E-05	0.0000	0.000E+00	0.0000	1.910E-04	0.0000	2.524E-05	0.0000	4.471E-06	0.0000	2.463E-04	0.0001
Th-232	2.147E+00	0.4527	1.314E-02	0.0028	0.000E+00	0.0000	8.478E-01	0.1788	2.368E-02	0.0050	6.533E-02	0.0138	5.766E-02	0.0122
Total	3.364E+00	0.7095	1.417E-02	0.0030	0.000E+00	0.0000	1.173E+00	0.2474	3.180E-02	0.0067	9.089E-02	0.0192	6.772E-02	0.0143

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.540E+00	0.3249
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.693E-02	0.0099
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.154E+00	0.6652
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.742E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.079E-01	0.0238	8.610E-05	0.0000	0.000E+00	0.0000	2.670E-02	0.0059	6.677E-04	0.0001	2.099E-03	0.0005	8.354E-04	0.0002
Th-228	3.207E-05	0.0000	3.596E-08	0.0000	0.000E+00	0.0000	1.248E-07	0.0000	1.648E-08	0.0000	2.920E-09	0.0000	1.609E-07	0.0000
Th-232	3.160E+00	0.6976	1.289E-02	0.0028	0.000E+00	0.0000	1.048E+00	0.2313	2.847E-02	0.0063	8.118E-02	0.0179	6.121E-02	0.0135
Total	3.268E+00	0.7214	1.298E-02	0.0029	0.000E+00	0.0000	1.075E+00	0.2372	2.914E-02	0.0064	8.327E-02	0.0184	6.204E-02	0.0137

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.383E-01	0.0305
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.241E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.392E+00	0.9695
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.530E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.985E-05	0.0000	1.263E-08	0.0000	0.000E+00	0.0000	3.914E-06	0.0000	9.788E-08	0.0000	3.076E-07	0.0000	1.225E-07	0.0000
Th-228	2.632E-16	0.0000	2.367E-19	0.0000	0.000E+00	0.0000	8.212E-19	0.0000	1.085E-19	0.0000	1.922E-20	0.0000	1.059E-18	0.0000
Th-232	2.796E+00	0.7650	8.834E-03	0.0024	0.000E+00	0.0000	7.314E-01	0.2001	1.983E-02	0.0054	5.668E-02	0.0155	4.222E-02	0.0116
Total	2.796E+00	0.7650	8.834E-03	0.0024	0.000E+00	0.0000	7.314E-01	0.2001	1.983E-02	0.0054	5.668E-02	0.0155	4.223E-02	0.0116

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.431E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.655E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.655E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.655E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	2.478E+00	2.191E+00	1.713E+00	7.229E-01	6.126E-02	1.025E-05	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.354E-01	8.053E-01	1.189E+00	8.175E-01	7.703E-02	1.406E-05	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		2.814E+00	2.997E+00	2.902E+00	1.540E+00	1.383E-01	2.431E-05	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.782E+00	1.239E+00	5.987E-01	4.693E-02	3.241E-05	2.655E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	8.563E-02	8.529E-02	8.460E-02	8.220E-02	7.533E-02	5.131E-02	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	1.476E-01	4.275E-01	8.924E-01	1.834E+00	2.357E+00	1.880E+00	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	1.416E-02	8.544E-02	3.363E-01	1.238E+00	1.959E+00	1.724E+00	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		2.474E-01	5.983E-01	1.313E+00	3.154E+00	4.392E+00	3.655E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	8.885E+00	8.343E+00	8.616E+00	1.623E+01	1.808E+02	1.028E+06	*2.726E+14	*2.726E+14	
Th-228	1.403E+01	2.018E+01	4.176E+01	5.327E+02	7.714E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.011E+02	4.179E+01	1.904E+01	7.925E+00	5.693E+00	6.841E+00	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	1.529 ± 0.003	3.017E+00	8.286E+00	2.814E+00	8.885E+00
Th-228	1.000E+00	0.000E+00	1.782E+00	1.403E+01	1.782E+00	1.403E+01
Th-232	1.000E+00	33.49 ± 0.07	4.402E+00	5.680E+00	2.474E-01	1.011E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	2.478E+00	2.191E+00	1.713E+00	7.229E-01	6.126E-02	1.025E-05	0.000E+00	0.000E+00
Ra-228	Th-232	1.000E+00	1.476E-01	4.275E-01	8.924E-01	1.834E+00	2.357E+00	1.880E+00	0.000E+00	0.000E+00
Ra-228	ΣDOSE(j)		2.626E+00	2.619E+00	2.605E+00	2.557E+00	2.419E+00	1.880E+00	0.000E+00	0.000E+00
Th-228	Ra-228	1.000E+00	3.354E-01	8.053E-01	1.189E+00	8.175E-01	7.703E-02	1.406E-05	0.000E+00	0.000E+00
Th-228	Th-228	1.000E+00	1.782E+00	1.239E+00	5.987E-01	4.693E-02	3.241E-05	2.655E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.416E-02	8.544E-02	3.363E-01	1.238E+00	1.959E+00	1.724E+00	0.000E+00	0.000E+00
Th-228	ΣDOSE(j)		2.132E+00	2.130E+00	2.124E+00	2.102E+00	2.036E+00	1.724E+00	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	8.563E-02	8.529E-02	8.460E-02	8.220E-02	7.533E-02	5.131E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01	9.886E-01
Ra-228	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01	9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.53 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Ra-228	1.000E+00
Thickness:	0.15 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.840E-01	6.820E-01	6.780E-01	6.639E-01	6.228E-01	4.667E-01	0.000E+00	0.000E+00
M(t):	2.736E-02	2.728E-02	2.712E-02	2.655E-02	2.491E-02	1.867E-02	0.000E+00	0.000E+00

Maximum TDOSE(t): 6.840E-01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.118E-01	0.4559	1.771E-04	0.0003	0.000E+00	0.0000	3.361E-03	0.0049	8.041E-06	0.0000	2.661E-05	0.0000	6.306E-05	0.0001
Th-228	3.443E-01	0.5033	8.822E-04	0.0013	0.000E+00	0.0000	2.236E-05	0.0000	2.954E-07	0.0000	5.235E-08	0.0000	2.883E-05	0.0000
Th-232	1.795E-02	0.0262	5.001E-03	0.0073	0.000E+00	0.0000	2.838E-04	0.0004	1.607E-06	0.0000	1.763E-06	0.0000	1.198E-04	0.0002
Total	6.741E-01	0.9854	6.060E-03	0.0089	0.000E+00	0.0000	3.667E-03	0.0054	9.943E-06	0.0000	2.843E-05	0.0000	2.117E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.155E-01	0.4612
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.452E-01	0.5047
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.336E-02	0.0341
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.840E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.736E-01	0.5477	4.070E-04	0.0006	0.000E+00	0.0000	2.975E-03	0.0044	7.189E-06	0.0000	2.351E-05	0.0000	6.386E-05	0.0001
Th-228	2.389E-01	0.3503	6.116E-04	0.0009	0.000E+00	0.0000	1.550E-05	0.0000	2.048E-07	0.0000	3.629E-08	0.0000	1.999E-05	0.0000
Th-232	5.961E-02	0.0874	5.017E-03	0.0074	0.000E+00	0.0000	6.622E-04	0.0010	2.510E-06	0.0000	4.759E-06	0.0000	1.270E-04	0.0002
Total	6.721E-01	0.9854	6.036E-03	0.0088	0.000E+00	0.0000	3.653E-03	0.0054	9.904E-06	0.0000	2.830E-05	0.0000	2.108E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.770E-01	0.5528
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.396E-01	0.3513
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.543E-02	0.0959
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.820E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.990E-01	0.5885	5.910E-04	0.0009	0.000E+00	0.0000	2.325E-03	0.0034	5.694E-06	0.0000	1.834E-05	0.0000	5.872E-05	0.0001
Th-228	1.151E-01	0.1697	2.939E-04	0.0004	0.000E+00	0.0000	7.450E-06	0.0000	9.843E-08	0.0000	1.744E-08	0.0000	9.606E-06	0.0000
Th-232	1.540E-01	0.2272	5.102E-03	0.0075	0.000E+00	0.0000	1.290E-03	0.0019	4.030E-06	0.0000	9.718E-06	0.0000	1.408E-04	0.0002
Total	6.682E-01	0.9855	5.987E-03	0.0088	0.000E+00	0.0000	3.623E-03	0.0053	9.823E-06	0.0000	2.807E-05	0.0000	2.091E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.020E-01	0.5930
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.154E-01	0.1702
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.606E-01	0.2369
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.780E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.272E-01	0.3423	3.969E-04	0.0006	0.000E+00	0.0000	9.749E-04	0.0015	2.428E-06	0.0000	7.667E-06	0.0000	2.943E-05	0.0000
Th-228	8.918E-03	0.0134	2.261E-05	0.0000	0.000E+00	0.0000	5.730E-07	0.0000	7.571E-09	0.0000	1.341E-09	0.0000	7.388E-07	0.0000
Th-232	4.181E-01	0.6299	5.397E-03	0.0081	0.000E+00	0.0000	2.543E-03	0.0038	7.105E-06	0.0000	1.960E-05	0.0000	1.730E-04	0.0003
Total	6.543E-01	0.9856	5.816E-03	0.0088	0.000E+00	0.0000	3.519E-03	0.0053	9.541E-06	0.0000	2.727E-05	0.0000	2.032E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.286E-01	0.3444
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.942E-03	0.0135
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.263E-01	0.6421
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.639E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.022E-02	0.0325	3.535E-05	0.0001	0.000E+00	0.0000	8.011E-05	0.0001	2.003E-07	0.0000	6.297E-07	0.0000	2.506E-06	0.0000
Th-228	5.958E-06	0.0000	1.476E-08	0.0000	0.000E+00	0.0000	3.742E-10	0.0000	4.945E-12	0.0000	8.761E-13	0.0000	4.826E-10	0.0000
Th-232	5.938E-01	0.9534	5.294E-03	0.0085	0.000E+00	0.0000	3.144E-03	0.0050	8.541E-06	0.0000	2.435E-05	0.0000	1.836E-04	0.0003
Total	6.140E-01	0.9859	5.329E-03	0.0086	0.000E+00	0.0000	3.224E-03	0.0052	8.742E-06	0.0000	2.498E-05	0.0000	1.861E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.034E-02	0.0327
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.973E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.024E-01	0.9673
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.228E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.264E-06	0.0000	5.184E-09	0.0000	0.000E+00	0.0000	1.174E-08	0.0000	2.937E-11	0.0000	9.229E-11	0.0000	3.675E-10	0.0000
Th-228	4.298E-17	0.0000	9.716E-20	0.0000	0.000E+00	0.0000	2.463E-21	0.0000	3.254E-23	0.0000	5.765E-24	0.0000	3.176E-21	0.0000
Th-232	4.607E-01	0.9872	3.627E-03	0.0078	0.000E+00	0.0000	2.194E-03	0.0047	5.950E-06	0.0000	1.700E-05	0.0000	1.267E-04	0.0003
Total	4.607E-01	0.9872	3.627E-03	0.0078	0.000E+00	0.0000	2.194E-03	0.0047	5.950E-06	0.0000	1.700E-05	0.0000	1.267E-04	0.0003

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.282E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.309E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.667E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.667E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	2.518E-01	2.226E-01	1.739E-01	7.327E-02	6.175E-03	1.005E-06	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	6.363E-02	1.544E-01	2.281E-01	1.554E-01	1.416E-02	2.277E-06	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		3.155E-01	3.770E-01	4.020E-01	2.286E-01	2.034E-02	3.282E-06	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	3.452E-01	2.396E-01	1.154E-01	8.942E-03	5.973E-06	4.309E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	5.233E-03	5.213E-03	5.171E-03	5.024E-03	4.605E-03	3.141E-03	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	1.546E-02	4.394E-02	9.111E-02	1.864E-01	2.380E-01	1.846E-01	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	2.660E-03	1.627E-02	6.431E-02	2.348E-01	3.598E-01	2.789E-01	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		2.336E-02	6.543E-02	1.606E-01	4.263E-01	6.024E-01	4.667E-01	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	7.925E+01	6.631E+01	6.218E+01	1.093E+02	1.229E+03	7.618E+06	*2.726E+14	*2.726E+14	
Th-228	7.242E+01	1.043E+02	2.167E+02	2.796E+03	4.185E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.070E+03	3.821E+02	1.557E+02	5.865E+01	4.150E+01	5.357E+01	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.515 ± 0.005	4.040E-01	6.188E+01	3.155E-01	7.925E+01
Th-228	1.000E+00	0.000E+00	3.452E-01	7.242E+01	3.452E-01	7.242E+01
Th-232	1.000E+00	31.51 ± 0.06	6.028E-01	4.148E+01	2.336E-02	1.070E+03

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	2.518E-01	2.226E-01	1.739E-01	7.327E-02	6.175E-03	1.005E-06	0.000E+00	0.000E+00
Ra-228	Th-232	1.000E+00	1.546E-02	4.394E-02	9.111E-02	1.864E-01	2.380E-01	1.846E-01	0.000E+00	0.000E+00
Ra-228	ΣDOSE(j)		2.673E-01	2.665E-01	2.650E-01	2.597E-01	2.442E-01	1.846E-01	0.000E+00	0.000E+00
Th-228	Ra-228	1.000E+00	6.363E-02	1.544E-01	2.281E-01	1.554E-01	1.416E-02	2.277E-06	0.000E+00	0.000E+00
Th-228	Th-228	1.000E+00	3.452E-01	2.396E-01	1.154E-01	8.942E-03	5.973E-06	4.309E-17	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	2.660E-03	1.627E-02	6.431E-02	2.348E-01	3.598E-01	2.789E-01	0.000E+00	0.000E+00
Th-228	ΣDOSE(j)		4.115E-01	4.103E-01	4.078E-01	3.991E-01	3.740E-01	2.790E-01	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	5.233E-03	5.213E-03	5.171E-03	5.024E-03	4.605E-03	3.141E-03	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01	9.886E-01
Ra-228	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01	9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.50 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Surface Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 2.152E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.709E-01	0.4511	2.291E-04	0.0001	0.000E+00	0.0000	3.361E-02	0.0156	8.041E-05	0.0000	2.661E-04	0.0001	6.306E-04	0.0003
Th-228	1.078E+00	0.5011	1.141E-03	0.0005	0.000E+00	0.0000	2.236E-04	0.0001	2.954E-06	0.0000	5.235E-07	0.0000	2.883E-04	0.0001
Th-232	5.585E-02	0.0260	6.469E-03	0.0030	0.000E+00	0.0000	2.838E-03	0.0013	1.607E-05	0.0000	1.763E-05	0.0000	1.198E-03	0.0006
Total	2.105E+00	0.9782	7.839E-03	0.0036	0.000E+00	0.0000	3.667E-02	0.0170	9.943E-05	0.0000	2.843E-04	0.0001	2.117E-03	0.0010

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.006E+00	0.4673
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.080E+00	0.5018
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.639E-02	0.0309
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.152E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.165E+00	0.5429	5.265E-04	0.0002	0.000E+00	0.0000	2.975E-02	0.0139	7.189E-05	0.0000	2.351E-04	0.0001	6.386E-04	0.0003
Th-228	7.486E-01	0.3488	7.911E-04	0.0004	0.000E+00	0.0000	1.550E-04	0.0001	2.048E-06	0.0000	3.629E-07	0.0000	1.999E-04	0.0001
Th-232	1.858E-01	0.0865	6.490E-03	0.0030	0.000E+00	0.0000	6.623E-03	0.0031	2.510E-05	0.0000	4.759E-05	0.0000	1.270E-03	0.0006
Total	2.100E+00	0.9782	7.808E-03	0.0036	0.000E+00	0.0000	3.653E-02	0.0170	9.904E-05	0.0000	2.830E-04	0.0001	2.108E-03	0.0010

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.197E+00	0.5574
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.497E-01	0.3493
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.002E-01	0.0933
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.146E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.247E+00	0.5841	7.645E-04	0.0004	0.000E+00	0.0000	2.325E-02	0.0109	5.694E-05	0.0000	1.834E-04	0.0001	5.872E-04	0.0003
Th-228	3.608E-01	0.1690	3.802E-04	0.0002	0.000E+00	0.0000	7.450E-05	0.0000	9.843E-07	0.0000	1.744E-07	0.0000	9.606E-05	0.0000
Th-232	4.809E-01	0.2252	6.600E-03	0.0031	0.000E+00	0.0000	1.290E-02	0.0060	4.030E-05	0.0000	9.718E-05	0.0000	1.408E-03	0.0007
Total	2.089E+00	0.9782	7.744E-03	0.0036	0.000E+00	0.0000	3.623E-02	0.0170	9.823E-05	0.0000	2.807E-04	0.0001	2.091E-03	0.0010

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.272E+00	0.5957
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.613E-01	0.1692
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.019E-01	0.2351
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.135E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.126E-01	0.3400	5.134E-04	0.0002	0.000E+00	0.0000	9.749E-03	0.0047	2.428E-05	0.0000	7.667E-05	0.0000	2.943E-04	0.0001
Th-228	2.803E-02	0.0134	2.924E-05	0.0000	0.000E+00	0.0000	5.730E-06	0.0000	7.571E-08	0.0000	1.341E-08	0.0000	7.388E-06	0.0000
Th-232	1.310E+00	0.6251	6.981E-03	0.0033	0.000E+00	0.0000	2.543E-02	0.0121	7.105E-05	0.0000	1.960E-04	0.0001	1.730E-03	0.0008
Total	2.051E+00	0.9785	7.524E-03	0.0036	0.000E+00	0.0000	3.519E-02	0.0168	9.541E-05	0.0000	2.727E-04	0.0001	2.032E-03	0.0010

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.233E-01	0.3451
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.807E-02	0.0134
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.345E+00	0.6415
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.096E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.391E-02	0.0323	4.573E-05	0.0000	0.000E+00	0.0000	8.011E-04	0.0004	2.003E-06	0.0000	6.297E-06	0.0000	2.506E-05	0.0000
Th-228	1.886E-05	0.0000	1.910E-08	0.0000	0.000E+00	0.0000	3.743E-09	0.0000	4.945E-11	0.0000	8.761E-12	0.0000	4.826E-09	0.0000
Th-232	1.876E+00	0.9469	6.848E-03	0.0035	0.000E+00	0.0000	3.144E-02	0.0159	8.541E-05	0.0000	2.435E-04	0.0001	1.836E-03	0.0009
Total	1.940E+00	0.9791	6.894E-03	0.0035	0.000E+00	0.0000	3.224E-02	0.0163	8.742E-05	0.0000	2.498E-04	0.0001	1.861E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.479E-02	0.0327
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.889E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.916E+00	0.9673
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.981E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.065E-05	0.0000	6.706E-09	0.0000	0.000E+00	0.0000	1.174E-07	0.0000	2.937E-10	0.0000	9.229E-10	0.0000	3.675E-09	0.0000
Th-228	1.403E-16	0.0000	1.257E-19	0.0000	0.000E+00	0.0000	2.463E-20	0.0000	3.254E-22	0.0000	5.765E-23	0.0000	3.176E-20	0.0000
Th-232	1.502E+00	0.9816	4.692E-03	0.0031	0.000E+00	0.0000	2.194E-02	0.0143	5.950E-05	0.0000	1.700E-04	0.0001	1.267E-03	0.0008
Total	1.502E+00	0.9816	4.692E-03	0.0031	0.000E+00	0.0000	2.194E-02	0.0143	5.950E-05	0.0000	1.700E-04	0.0001	1.267E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.078E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.405E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.530E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.530E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	8.065E-01	7.131E-01	5.575E-01	2.355E-01	1.999E-02	3.352E-06	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.992E-01	4.834E-01	7.145E-01	4.878E-01	4.480E-02	7.423E-06	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		1.006E+00	1.197E+00	1.272E+00	7.233E-01	6.479E-02	1.078E-05	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.080E+00	7.497E-01	3.613E-01	2.807E-02	1.889E-05	1.405E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	8.623E-03	8.589E-03	8.520E-03	8.280E-03	7.593E-03	5.190E-03	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	4.944E-02	1.407E-01	2.920E-01	5.990E-01	7.705E-01	6.156E-01	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	8.330E-03	5.095E-02	2.014E-01	7.373E-01	1.138E+00	9.094E-01	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		6.639E-02	2.002E-01	5.019E-01	1.345E+00	1.916E+00	1.530E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	2.486E+01	2.089E+01	1.965E+01	3.457E+01	3.859E+02	2.320E+06	*2.726E+14	*2.726E+14	
Th-228	2.315E+01	3.334E+01	6.919E+01	8.905E+02	1.323E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	3.766E+02	1.249E+02	4.981E+01	1.859E+01	1.305E+01	1.634E+01	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.493 ± 0.005	1.279E+00	1.955E+01	1.006E+00	2.486E+01
Th-228	1.000E+00	0.000E+00	1.080E+00	2.315E+01	1.080E+00	2.315E+01
Th-232	1.000E+00	32.46 ± 0.06	1.919E+00	1.303E+01	6.639E-02	3.766E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	8.065E-01	7.131E-01	5.575E-01	2.355E-01	1.999E-02	3.352E-06	0.000E+00	0.000E+00
Ra-228	Th-232	1.000E+00	4.944E-02	1.407E-01	2.920E-01	5.990E-01	7.705E-01	6.156E-01	0.000E+00	0.000E+00
Ra-228	ΣDOSE(j)		8.559E-01	8.538E-01	8.495E-01	8.344E-01	7.905E-01	6.156E-01	0.000E+00	0.000E+00
Th-228	Ra-228	1.000E+00	1.992E-01	4.834E-01	7.145E-01	4.878E-01	4.480E-02	7.423E-06	0.000E+00	0.000E+00
Th-228	Th-228	1.000E+00	1.080E+00	7.497E-01	3.613E-01	2.807E-02	1.889E-05	1.405E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	8.330E-03	5.095E-02	2.014E-01	7.373E-01	1.138E+00	9.094E-01	0.000E+00	0.000E+00
Th-228	ΣDOSE(j)		1.287E+00	1.284E+00	1.277E+00	1.253E+00	1.183E+00	9.094E-01	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	8.623E-03	8.589E-03	8.520E-03	8.280E-03	7.593E-03	5.190E-03	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01	9.886E-01
Ra-228	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01	9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.44 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 3.450E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.396E+00	0.4046	2.953E-04	0.0001	0.000E+00	0.0000	3.361E-01	0.0974	8.041E-04	0.0002	2.661E-03	0.0008	6.306E-03	0.0018
Th-228	1.572E+00	0.4557	1.471E-03	0.0004	0.000E+00	0.0000	2.236E-03	0.0006	2.954E-05	0.0000	5.235E-06	0.0000	2.883E-03	0.0008
Th-232	8.021E-02	0.0232	8.341E-03	0.0024	0.000E+00	0.0000	2.838E-02	0.0082	1.607E-04	0.0000	1.763E-04	0.0001	1.198E-02	0.0035
Total	3.048E+00	0.8835	1.011E-02	0.0029	0.000E+00	0.0000	3.667E-01	0.1063	9.943E-04	0.0003	2.843E-03	0.0008	2.117E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.742E+00	0.5049
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E+00	0.4577
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.293E-01	0.0375
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.450E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.683E+00	0.4888	6.788E-04	0.0002	0.000E+00	0.0000	2.975E-01	0.0864	7.189E-04	0.0002	2.351E-03	0.0007	6.386E-03	0.0019
Th-228	1.092E+00	0.3173	1.020E-03	0.0003	0.000E+00	0.0000	1.550E-03	0.0005	2.048E-05	0.0000	3.629E-06	0.0000	1.999E-03	0.0006
Th-232	2.676E-01	0.0777	8.368E-03	0.0024	0.000E+00	0.0000	6.623E-02	0.0192	2.510E-04	0.0001	4.759E-04	0.0001	1.270E-02	0.0037
Total	3.043E+00	0.8838	1.007E-02	0.0029	0.000E+00	0.0000	3.653E-01	0.1061	9.904E-04	0.0003	2.830E-03	0.0008	2.108E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.991E+00	0.5781
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.097E+00	0.3186
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.556E-01	0.1033
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.443E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.809E+00	0.5276	9.857E-04	0.0003	0.000E+00	0.0000	2.325E-01	0.0678	5.694E-04	0.0002	1.834E-03	0.0005	5.872E-03	0.0017
Th-228	5.273E-01	0.1538	4.902E-04	0.0001	0.000E+00	0.0000	7.451E-04	0.0002	9.843E-06	0.0000	1.744E-06	0.0000	9.606E-04	0.0003
Th-232	6.957E-01	0.2029	8.509E-03	0.0025	0.000E+00	0.0000	1.290E-01	0.0376	4.030E-04	0.0001	9.718E-04	0.0003	1.408E-02	0.0041
Total	3.032E+00	0.8842	9.985E-03	0.0029	0.000E+00	0.0000	3.623E-01	0.1056	9.823E-04	0.0003	2.807E-03	0.0008	2.091E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.051E+00	0.5981
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.295E-01	0.1544
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.487E-01	0.2475
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.429E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.042E+00	0.3082	6.620E-04	0.0002	0.000E+00	0.0000	9.749E-02	0.0288	2.428E-04	0.0001	7.667E-04	0.0002	2.943E-03	0.0009
Th-228	4.120E-02	0.0122	3.770E-05	0.0000	0.000E+00	0.0000	5.730E-05	0.0000	7.571E-07	0.0000	1.341E-07	0.0000	7.388E-05	0.0000
Th-232	1.911E+00	0.5655	9.001E-03	0.0027	0.000E+00	0.0000	2.543E-01	0.0753	7.105E-04	0.0002	1.960E-03	0.0006	1.730E-02	0.0051
Total	2.994E+00	0.8859	9.701E-03	0.0029	0.000E+00	0.0000	3.519E-01	0.1041	9.541E-04	0.0003	2.727E-03	0.0008	2.032E-02	0.0060

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.144E+00	0.3384
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.137E-02	0.0122
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.194E+00	0.6493
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.380E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.501E-02	0.0294	5.896E-05	0.0000	0.000E+00	0.0000	8.011E-03	0.0025	2.003E-05	0.0000	6.297E-05	0.0000	2.506E-04	0.0001
Th-228	2.818E-05	0.0000	2.462E-08	0.0000	0.000E+00	0.0000	3.743E-08	0.0000	4.945E-10	0.0000	8.761E-11	0.0000	4.826E-08	0.0000
Th-232	2.784E+00	0.8613	8.829E-03	0.0027	0.000E+00	0.0000	3.144E-01	0.0973	8.541E-04	0.0003	2.435E-03	0.0008	1.836E-02	0.0057
Total	2.879E+00	0.8907	8.888E-03	0.0027	0.000E+00	0.0000	3.224E-01	0.0997	8.742E-04	0.0003	2.498E-03	0.0008	1.861E-02	0.0058

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.034E-01	0.0320
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.829E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.129E+00	0.9680
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.233E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.687E-05	0.0000	8.647E-09	0.0000	0.000E+00	0.0000	1.174E-06	0.0000	2.937E-09	0.0000	9.229E-09	0.0000	3.675E-08	0.0000
Th-228	2.230E-16	0.0000	1.620E-19	0.0000	0.000E+00	0.0000	2.463E-19	0.0000	3.254E-21	0.0000	5.765E-22	0.0000	3.176E-19	0.0000
Th-232	2.377E+00	0.9081	6.049E-03	0.0023	0.000E+00	0.0000	2.194E-01	0.0838	5.950E-04	0.0002	1.700E-03	0.0006	1.267E-02	0.0048
Total	2.377E+00	0.9081	6.049E-03	0.0023	0.000E+00	0.0000	2.194E-01	0.0838	5.950E-04	0.0002	1.700E-03	0.0006	1.267E-02	0.0048

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.810E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.237E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.618E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.618E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.449E+00	1.282E+00	1.003E+00	4.244E-01	3.628E-02	6.267E-06	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	2.930E-01	7.090E-01	1.048E+00	7.194E-01	6.713E-02	1.183E-05	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		1.742E+00	1.991E+00	2.051E+00	1.144E+00	1.034E-01	1.810E-05	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.579E+00	1.097E+00	5.295E-01	4.137E-02	2.829E-05	2.237E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	2.919E-02	2.907E-02	2.884E-02	2.802E-02	2.568E-02	1.751E-02	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	8.778E-02	2.517E-01	5.240E-01	1.079E+00	1.398E+00	1.150E+00	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	1.229E-02	7.488E-02	2.959E-01	1.088E+00	1.706E+00	1.450E+00	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		1.293E-01	3.556E-01	8.487E-01	2.194E+00	3.129E+00	2.618E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.435E+01	1.256E+01	1.219E+01	2.186E+01	2.417E+02	1.381E+06	*2.726E+14	*2.726E+14	
Th-228	1.583E+01	2.279E+01	4.721E+01	6.043E+02	8.837E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.934E+02	7.030E+01	2.946E+01	1.139E+01	7.989E+00	9.551E+00	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.225 ± 0.004	2.076E+00	1.204E+01	1.742E+00	1.435E+01
Th-228	1.000E+00	0.000E+00	1.579E+00	1.583E+01	1.579E+00	1.583E+01
Th-232	1.000E+00	34.09 ± 0.07	3.139E+00	7.965E+00	1.293E-01	1.934E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.449E+00	1.282E+00	1.003E+00	4.244E-01	3.628E-02	6.267E-06	0.000E+00 0.000E+00
Ra-228	Th-232	1.000E+00		8.778E-02	2.517E-01	5.240E-01	1.079E+00	1.398E+00	1.150E+00	0.000E+00 0.000E+00
Ra-228	ΣDOSE(j)			1.537E+00	1.533E+00	1.527E+00	1.503E+00	1.434E+00	1.150E+00	0.000E+00 0.000E+00
Th-228	Ra-228	1.000E+00		2.930E-01	7.090E-01	1.048E+00	7.194E-01	6.713E-02	1.183E-05	0.000E+00 0.000E+00
Th-228	Th-228	1.000E+00		1.579E+00	1.097E+00	5.295E-01	4.137E-02	2.829E-05	2.237E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.229E-02	7.488E-02	2.959E-01	1.088E+00	1.706E+00	1.450E+00	0.000E+00 0.000E+00
Th-228	ΣDOSE(j)			1.884E+00	1.881E+00	1.874E+00	1.849E+00	1.773E+00	1.450E+00	0.000E+00 0.000E+00
Th-232	Th-232	1.000E+00		2.919E-02	2.907E-02	2.884E-02	2.802E-02	2.568E-02	1.751E-02	0.000E+00 0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01 9.886E-01
Ra-228	ΣS(j):			1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01 9.886E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01 9.886E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01 9.886E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01 9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.47 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	8.950E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.084E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.090E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Surface Th-232+C CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - SURFACE TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3000.00 square meters	Ra-228	1.000E+00
Thickness:	0.15 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.679E+00	4.669E+00	4.649E+00	4.578E+00	4.369E+00	3.512E+00	0.000E+00	0.000E+00
M(t):	1.872E-01	1.868E-01	1.860E-01	1.831E-01	1.748E-01	1.405E-01	0.000E+00	0.000E+00

Maximum TDOSE(t): 4.679E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.524E+00	0.3257	3.792E-04	0.0001	0.000E+00	0.0000	1.120E+00	0.2394	8.041E-03	0.0017	2.661E-02	0.0057	2.102E-02	0.0045
Th-228	1.723E+00	0.3683	1.889E-03	0.0004	0.000E+00	0.0000	7.455E-03	0.0016	2.954E-04	0.0001	5.235E-05	0.0000	9.611E-03	0.0021
Th-232	8.756E-02	0.0187	1.071E-02	0.0023	0.000E+00	0.0000	9.461E-02	0.0202	1.607E-03	0.0003	1.763E-03	0.0004	3.993E-02	0.0085
Total	3.335E+00	0.7127	1.298E-02	0.0028	0.000E+00	0.0000	1.222E+00	0.2612	9.943E-03	0.0021	2.843E-02	0.0061	7.056E-02	0.0151

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.700E+00	0.5771
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.743E+00	0.3724
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.362E-01	0.0505
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.679E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.840E+00	0.3941	8.716E-04	0.0002	0.000E+00	0.0000	9.916E-01	0.2124	7.189E-03	0.0015	2.351E-02	0.0050	2.129E-02	0.0046
Th-228	1.198E+00	0.2565	1.310E-03	0.0003	0.000E+00	0.0000	5.168E-03	0.0011	2.048E-04	0.0000	3.629E-05	0.0000	6.663E-03	0.0014
Th-232	2.924E-01	0.0626	1.074E-02	0.0023	0.000E+00	0.0000	2.208E-01	0.0473	2.510E-03	0.0005	4.759E-03	0.0010	4.233E-02	0.0091
Total	3.330E+00	0.7132	1.293E-02	0.0028	0.000E+00	0.0000	1.218E+00	0.2608	9.904E-03	0.0021	2.830E-02	0.0061	7.028E-02	0.0151

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.885E+00	0.6178
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.211E+00	0.2594
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.735E-01	0.1228
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.669E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.981E+00	0.4261	1.266E-03	0.0003	0.000E+00	0.0000	7.751E-01	0.1667	5.694E-03	0.0012	1.834E-02	0.0039	1.957E-02	0.0042
Th-228	5.787E-01	0.1245	6.294E-04	0.0001	0.000E+00	0.0000	2.484E-03	0.0005	9.843E-05	0.0000	1.744E-05	0.0000	3.202E-03	0.0007
Th-232	7.613E-01	0.1638	1.093E-02	0.0024	0.000E+00	0.0000	4.300E-01	0.0925	4.030E-03	0.0009	9.719E-03	0.0021	4.693E-02	0.0101
Total	3.321E+00	0.7143	1.282E-02	0.0028	0.000E+00	0.0000	1.208E+00	0.2597	9.823E-03	0.0021	2.807E-02	0.0060	6.971E-02	0.0150

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.801E+00	0.6025
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.851E-01	0.1258
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.263E+00	0.2716
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.649E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.144E+00	0.2500	8.500E-04	0.0002	0.000E+00	0.0000	3.250E-01	0.0710	2.428E-03	0.0005	7.667E-03	0.0017	9.809E-03	0.0021
Th-228	4.533E-02	0.0099	4.841E-05	0.0000	0.000E+00	0.0000	1.910E-04	0.0000	7.571E-06	0.0000	1.341E-06	0.0000	2.463E-04	0.0001
Th-232	2.098E+00	0.4584	1.156E-02	0.0025	0.000E+00	0.0000	8.478E-01	0.1852	7.105E-03	0.0016	1.960E-02	0.0043	5.766E-02	0.0126
Total	3.288E+00	0.7182	1.246E-02	0.0027	0.000E+00	0.0000	1.173E+00	0.2562	9.541E-03	0.0021	2.727E-02	0.0060	6.772E-02	0.0148

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.490E+00	0.3255
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.583E-02	0.0100
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.042E+00	0.6645
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.578E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.052E-01	0.0241	7.570E-05	0.0000	0.000E+00	0.0000	2.670E-02	0.0061	2.003E-04	0.0000	6.297E-04	0.0001	8.354E-04	0.0002
Th-228	3.126E-05	0.0000	3.162E-08	0.0000	0.000E+00	0.0000	1.248E-07	0.0000	4.945E-09	0.0000	8.761E-10	0.0000	1.609E-07	0.0000
Th-232	3.082E+00	0.7054	1.134E-02	0.0026	0.000E+00	0.0000	1.048E+00	0.2398	8.541E-03	0.0020	2.435E-02	0.0056	6.121E-02	0.0140
Total	3.188E+00	0.7295	1.141E-02	0.0026	0.000E+00	0.0000	1.075E+00	0.2459	8.742E-03	0.0020	2.498E-02	0.0057	6.204E-02	0.0142

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.337E-01	0.0306
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.159E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.236E+00	0.9694
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.369E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.922E-05	0.0000	1.110E-08	0.0000	0.000E+00	0.0000	3.914E-06	0.0000	2.937E-08	0.0000	9.229E-08	0.0000	1.225E-07	0.0000
Th-228	2.547E-16	0.0000	2.081E-19	0.0000	0.000E+00	0.0000	8.211E-19	0.0000	3.254E-20	0.0000	5.765E-21	0.0000	1.059E-18	0.0000
Th-232	2.707E+00	0.7709	7.767E-03	0.0022	0.000E+00	0.0000	7.314E-01	0.2083	5.950E-03	0.0017	1.700E-02	0.0048	4.222E-02	0.0120
Total	2.707E+00	0.7709	7.767E-03	0.0022	0.000E+00	0.0000	7.314E-01	0.2083	5.950E-03	0.0017	1.700E-02	0.0048	4.223E-02	0.0120

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.339E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.568E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.512E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.512E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	2.372E+00	2.097E+00	1.639E+00	6.918E-01	5.861E-02	9.794E-06	0.000E+00	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.279E-01	7.872E-01	1.162E+00	7.984E-01	7.507E-02	1.360E-05	0.000E+00	0.000E+00
Ra-228+D	ΣDSR(j)		2.700E+00	2.885E+00	2.801E+00	1.490E+00	1.337E-01	2.339E-05	0.000E+00	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.743E+00	1.211E+00	5.851E-01	4.583E-02	3.159E-05	2.568E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	8.089E-02	8.057E-02	7.992E-02	7.765E-02	7.116E-02	4.847E-02	0.000E+00	0.000E+00
Th-232	Ra-228+D	1.000E+00	1.414E-01	4.094E-01	8.543E-01	1.756E+00	2.255E+00	1.796E+00	0.000E+00	0.000E+00
Th-232	Th-228+D	1.000E+00	1.384E-02	8.351E-02	3.287E-01	1.209E+00	1.909E+00	1.667E+00	0.000E+00	0.000E+00
Th-232	ΣDSR(j)		2.362E-01	5.735E-01	1.263E+00	3.042E+00	4.236E+00	3.512E+00	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	9.258E+00	8.667E+00	8.925E+00	1.678E+01	1.870E+02	1.069E+06	*2.726E+14	*2.726E+14	
Th-228	1.435E+01	2.064E+01	4.273E+01	5.455E+02	7.915E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.059E+02	4.359E+01	1.980E+01	8.218E+00	5.902E+00	7.119E+00	*1.097E+05	*1.097E+05	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	1.567 ± 0.003	2.907E+00	8.599E+00	2.700E+00	9.258E+00
Th-228	1.000E+00	0.000E+00	1.743E+00	1.435E+01	1.743E+00	1.435E+01
Th-232	1.000E+00	33.35 ± 0.07	4.245E+00	5.890E+00	2.362E-01	1.059E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	2.372E+00	2.097E+00	1.639E+00	6.918E-01	5.861E-02	9.794E-06	0.000E+00	0.000E+00
Ra-228	Th-232	1.000E+00	1.414E-01	4.094E-01	8.543E-01	1.756E+00	2.255E+00	1.796E+00	0.000E+00	0.000E+00
Ra-228	ΣDOSE(j)		2.514E+00	2.507E+00	2.494E+00	2.448E+00	2.314E+00	1.796E+00	0.000E+00	0.000E+00
Th-228	Ra-228	1.000E+00	3.279E-01	7.872E-01	1.162E+00	7.984E-01	7.507E-02	1.360E-05	0.000E+00	0.000E+00
Th-228	Th-228	1.000E+00	1.743E+00	1.211E+00	5.851E-01	4.583E-02	3.159E-05	2.568E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.384E-02	8.351E-02	3.287E-01	1.209E+00	1.909E+00	1.667E+00	0.000E+00	0.000E+00
Th-228	ΣDOSE(j)		2.084E+00	2.082E+00	2.076E+00	2.053E+00	1.984E+00	1.667E+00	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	8.089E-02	8.057E-02	7.992E-02	7.765E-02	7.116E-02	4.847E-02	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.964E-01	2.993E-01	2.681E-02	5.770E-06	1.921E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.034E-01	7.002E-01	9.723E-01	9.983E-01	9.962E-01	9.886E-01
Ra-228	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.383E-01	4.087E-01	4.017E-02	8.650E-06	2.880E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.902E-05	1.838E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.642E-01	9.589E-01	9.983E-01	9.962E-01	9.886E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.991E-01	9.983E-01	9.962E-01	9.886E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.989E-01	9.967E-01	9.892E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.41 seconds

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Time = 1.000E+01	18
Time = 3.000E+01	19
Time = 1.000E+02	20
Time = 3.000E+02	21
Time = 1.000E+03	22
Dose/Source Ratios Summed Over All Pathways	23
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Summary : Hematite - Uniform CSM - AF 1 m²

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Attachment 4 to HEM-11-91

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM - AF 1 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Uniform CSM - AF 1 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Uniform CSM - AF 1 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.073E-02	7.070E-02	7.064E-02	7.043E-02	6.983E-02	6.787E-02	6.288E-02	5.379E-02
M(t):	2.829E-03	2.828E-03	2.826E-03	2.817E-03	2.793E-03	2.715E-03	2.515E-03	2.152E-03

Maximum TDOSE(t): 7.073E-02 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Uniform CSM - AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.385E-03	0.0196	1.196E-03	0.0169	0.000E+00	0.0000	2.419E-04	0.0034	2.731E-07	0.0000	3.890E-08	0.0000	5.163E-05	0.0007
Np-237	3.013E-02	0.4260	1.455E-03	0.0206	0.000E+00	0.0000	5.908E-03	0.0835	9.962E-06	0.0001	3.260E-07	0.0000	6.306E-05	0.0009
Pu-239	8.563E-06	0.0001	1.156E-03	0.0163	0.000E+00	0.0000	2.354E-04	0.0033	5.315E-07	0.0000	1.874E-08	0.0000	5.025E-05	0.0007
Pu-240	5.516E-06	0.0001	1.156E-03	0.0163	0.000E+00	0.0000	2.354E-04	0.0033	5.315E-07	0.0000	1.874E-08	0.0000	5.025E-05	0.0007
Tc-99	3.639E-06	0.0001	2.243E-08	0.0000	0.000E+00	0.0000	9.000E-04	0.0127	5.246E-08	0.0000	1.427E-06	0.0000	2.072E-08	0.0000
U-234	1.250E-05	0.0002	3.558E-04	0.0050	0.000E+00	0.0000	6.963E-05	0.0010	5.911E-07	0.0000	9.560E-07	0.0000	4.017E-06	0.0001
U-235	2.127E-02	0.3006	3.316E-04	0.0047	0.000E+00	0.0000	6.585E-05	0.0009	5.585E-07	0.0000	9.032E-07	0.0000	3.797E-06	0.0001
U-238	3.987E-03	0.0564	3.182E-04	0.0045	0.000E+00	0.0000	6.611E-05	0.0009	5.613E-07	0.0000	9.077E-07	0.0000	3.814E-06	0.0001
Total	5.680E-02	0.8030	5.970E-03	0.0844	0.000E+00	0.0000	7.722E-03	0.1092	1.306E-05	0.0002	4.596E-06	0.0001	2.268E-04	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.874E-03	0.0406
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.757E-02	0.5311
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.451E-03	0.0205
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.448E-03	0.0205
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.051E-04	0.0128
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.435E-04	0.0063
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.167E-02	0.3063
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.377E-03	0.0619
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.073E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.382E-03	0.0196	1.194E-03	0.0169	0.000E+00	0.0000	2.415E-04	0.0034	2.726E-07	0.0000	3.884E-08	0.0000	5.155E-05	0.0007
Np-237	3.011E-02	0.4259	1.454E-03	0.0206	0.000E+00	0.0000	5.904E-03	0.0835	9.956E-06	0.0001	3.258E-07	0.0000	6.302E-05	0.0009
Pu-239	8.563E-06	0.0001	1.156E-03	0.0164	0.000E+00	0.0000	2.354E-04	0.0033	5.315E-07	0.0000	1.874E-08	0.0000	5.025E-05	0.0007
Pu-240	5.516E-06	0.0001	1.156E-03	0.0164	0.000E+00	0.0000	2.354E-04	0.0033	5.314E-07	0.0000	1.874E-08	0.0000	5.024E-05	0.0007
Tc-99	3.638E-06	0.0001	2.242E-08	0.0000	0.000E+00	0.0000	8.998E-04	0.0127	5.246E-08	0.0000	1.426E-06	0.0000	2.072E-08	0.0000
U-234	1.250E-05	0.0002	3.558E-04	0.0050	0.000E+00	0.0000	6.963E-05	0.0010	5.911E-07	0.0000	9.560E-07	0.0000	4.017E-06	0.0001
U-235	2.126E-02	0.3008	3.317E-04	0.0047	0.000E+00	0.0000	6.600E-05	0.0009	5.584E-07	0.0000	9.031E-07	0.0000	3.800E-06	0.0001
U-238	3.987E-03	0.0564	3.182E-04	0.0045	0.000E+00	0.0000	6.611E-05	0.0009	5.612E-07	0.0000	9.077E-07	0.0000	3.814E-06	0.0001
Total	5.677E-02	0.8030	5.966E-03	0.0844	0.000E+00	0.0000	7.718E-03	0.1092	1.305E-05	0.0002	4.595E-06	0.0001	2.267E-04	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.870E-03	0.0406
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.754E-02	0.5310
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.451E-03	0.0205
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.448E-03	0.0205
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.050E-04	0.0128
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.435E-04	0.0063
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.167E-02	0.3065
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.377E-03	0.0619
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.070E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.378E-03	0.0195	1.190E-03	0.0168	0.000E+00	0.0000	2.407E-04	0.0034	2.718E-07	0.0000	3.871E-08	0.0000	5.138E-05	0.0007
Np-237	3.007E-02	0.4257	1.452E-03	0.0206	0.000E+00	0.0000	5.897E-03	0.0835	9.943E-06	0.0001	3.254E-07	0.0000	6.294E-05	0.0009
Pu-239	8.562E-06	0.0001	1.156E-03	0.0164	0.000E+00	0.0000	2.354E-04	0.0033	5.315E-07	0.0000	1.874E-08	0.0000	5.025E-05	0.0007
Pu-240	5.514E-06	0.0001	1.156E-03	0.0164	0.000E+00	0.0000	2.353E-04	0.0033	5.313E-07	0.0000	1.873E-08	0.0000	5.023E-05	0.0007
Tc-99	3.637E-06	0.0001	2.242E-08	0.0000	0.000E+00	0.0000	8.995E-04	0.0127	5.244E-08	0.0000	1.426E-06	0.0000	2.071E-08	0.0000
U-234	1.251E-05	0.0002	3.558E-04	0.0050	0.000E+00	0.0000	6.962E-05	0.0010	5.910E-07	0.0000	9.558E-07	0.0000	4.017E-06	0.0001
U-235	2.126E-02	0.3010	3.318E-04	0.0047	0.000E+00	0.0000	6.629E-05	0.0009	5.584E-07	0.0000	9.030E-07	0.0000	3.806E-06	0.0001
U-238	3.987E-03	0.0564	3.181E-04	0.0045	0.000E+00	0.0000	6.610E-05	0.0009	5.612E-07	0.0000	9.076E-07	0.0000	3.814E-06	0.0001
Total	5.673E-02	0.8030	5.960E-03	0.0844	0.000E+00	0.0000	7.710E-03	0.1091	1.304E-05	0.0002	4.594E-06	0.0001	2.265E-04	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.861E-03	0.0405
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.749E-02	0.5307
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.451E-03	0.0205
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.448E-03	0.0205
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.047E-04	0.0128
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.435E-04	0.0063
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.167E-02	0.3067
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.376E-03	0.0619
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.064E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.363E-03	0.0193	1.177E-03	0.0167	0.000E+00	0.0000	2.380E-04	0.0034	2.687E-07	0.0000	3.828E-08	0.0000	5.081E-05	0.0007
Np-237	2.993E-02	0.4250	1.446E-03	0.0205	0.000E+00	0.0000	5.870E-03	0.0833	9.897E-06	0.0001	3.240E-07	0.0000	6.265E-05	0.0009
Pu-239	8.560E-06	0.0001	1.156E-03	0.0164	0.000E+00	0.0000	2.353E-04	0.0033	5.313E-07	0.0000	1.873E-08	0.0000	5.023E-05	0.0007
Pu-240	5.510E-06	0.0001	1.155E-03	0.0164	0.000E+00	0.0000	2.351E-04	0.0033	5.309E-07	0.0000	1.872E-08	0.0000	5.019E-05	0.0007
Tc-99	3.633E-06	0.0001	2.239E-08	0.0000	0.000E+00	0.0000	8.985E-04	0.0128	5.238E-08	0.0000	1.424E-06	0.0000	2.069E-08	0.0000
U-234	1.255E-05	0.0002	3.557E-04	0.0050	0.000E+00	0.0000	6.959E-05	0.0010	5.907E-07	0.0000	9.554E-07	0.0000	4.015E-06	0.0001
U-235	2.125E-02	0.3018	3.327E-04	0.0047	0.000E+00	0.0000	6.733E-05	0.0010	5.581E-07	0.0000	9.026E-07	0.0000	3.833E-06	0.0001
U-238	3.985E-03	0.0566	3.180E-04	0.0045	0.000E+00	0.0000	6.607E-05	0.0009	5.609E-07	0.0000	9.072E-07	0.0000	3.812E-06	0.0001
Total	5.657E-02	0.8032	5.940E-03	0.0843	0.000E+00	0.0000	7.680E-03	0.1090	1.299E-05	0.0002	4.589E-06	0.0001	2.256E-04	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.829E-03	0.0402
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.732E-02	0.5299
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.451E-03	0.0206
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.446E-03	0.0205
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.037E-04	0.0128
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.434E-04	0.0063
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.166E-02	0.3075
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.374E-03	0.0621
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.043E-02	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.320E-03	0.0189	1.140E-03	0.0163	0.000E+00	0.0000	2.306E-04	0.0033	2.603E-07	0.0000	3.707E-08	0.0000	4.920E-05	0.0007
Np-237	2.955E-02	0.4231	1.427E-03	0.0204	0.000E+00	0.0000	5.794E-03	0.0830	9.769E-06	0.0001	3.198E-07	0.0000	6.184E-05	0.0009
Pu-239	8.553E-06	0.0001	1.155E-03	0.0165	0.000E+00	0.0000	2.351E-04	0.0034	5.308E-07	0.0000	1.872E-08	0.0000	5.019E-05	0.0007
Pu-240	5.497E-06	0.0001	1.152E-03	0.0165	0.000E+00	0.0000	2.346E-04	0.0034	5.296E-07	0.0000	1.867E-08	0.0000	5.007E-05	0.0007
Tc-99	3.621E-06	0.0001	2.232E-08	0.0000	0.000E+00	0.0000	8.957E-04	0.0128	5.222E-08	0.0000	1.420E-06	0.0000	2.063E-08	0.0000
U-234	1.299E-05	0.0002	3.553E-04	0.0051	0.000E+00	0.0000	6.951E-05	0.0010	5.899E-07	0.0000	9.541E-07	0.0000	4.011E-06	0.0001
U-235	2.124E-02	0.3041	3.373E-04	0.0048	0.000E+00	0.0000	7.042E-05	0.0010	5.575E-07	0.0000	9.016E-07	0.0000	3.933E-06	0.0001
U-238	3.979E-03	0.0570	3.176E-04	0.0045	0.000E+00	0.0000	6.599E-05	0.0009	5.602E-07	0.0000	9.060E-07	0.0000	3.807E-06	0.0001
Total	5.611E-02	0.8035	5.884E-03	0.0843	0.000E+00	0.0000	7.595E-03	0.1088	1.285E-05	0.0002	4.576E-06	0.0001	2.231E-04	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.739E-03	0.0392
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.684E-02	0.5275
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.449E-03	0.0208
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.443E-03	0.0207
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.008E-04	0.0129
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.434E-04	0.0063
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.165E-02	0.3101
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.368E-03	0.0626
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.983E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.180E-03	0.0174	1.019E-03	0.0150	0.000E+00	0.0000	2.062E-04	0.0030	2.328E-07	0.0000	3.314E-08	0.0000	4.397E-05	0.0006
Np-237	2.822E-02	0.4159	1.363E-03	0.0201	0.000E+00	0.0000	5.535E-03	0.0815	9.332E-06	0.0001	3.058E-07	0.0000	5.907E-05	0.0009
Pu-239	8.529E-06	0.0001	1.152E-03	0.0170	0.000E+00	0.0000	2.344E-04	0.0035	5.293E-07	0.0000	1.866E-08	0.0000	5.004E-05	0.0007
Pu-240	5.451E-06	0.0001	1.143E-03	0.0168	0.000E+00	0.0000	2.326E-04	0.0034	5.252E-07	0.0000	1.852E-08	0.0000	4.965E-05	0.0007
Tc-99	3.582E-06	0.0001	2.207E-08	0.0000	0.000E+00	0.0000	8.858E-04	0.0131	5.164E-08	0.0000	1.404E-06	0.0000	2.040E-08	0.0000
U-234	1.786E-05	0.0003	3.541E-04	0.0052	0.000E+00	0.0000	6.933E-05	0.0010	5.873E-07	0.0000	9.499E-07	0.0000	3.998E-06	0.0001
U-235	2.122E-02	0.3126	3.635E-04	0.0054	0.000E+00	0.0000	8.173E-05	0.0012	5.556E-07	0.0000	8.981E-07	0.0000	4.400E-06	0.0001
U-238	3.961E-03	0.0584	3.162E-04	0.0047	0.000E+00	0.0000	6.569E-05	0.0010	5.577E-07	0.0000	9.020E-07	0.0000	3.790E-06	0.0001
Total	5.462E-02	0.8047	5.710E-03	0.0841	0.000E+00	0.0000	7.310E-03	0.1077	1.237E-05	0.0002	4.530E-06	0.0001	2.149E-04	0.0032

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.449E-03	0.0361
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.519E-02	0.5185
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.445E-03	0.0213
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.431E-03	0.0211
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.909E-04	0.0131
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.469E-04	0.0066
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.167E-02	0.3193
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.348E-03	0.0641
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.787E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.574E-04	0.0136	7.388E-04	0.0117	0.000E+00	0.0000	1.498E-04	0.0024	1.694E-07	0.0000	2.405E-08	0.0000	3.190E-05	0.0005
Np-237	2.477E-02	0.3939	1.197E-03	0.0190	0.000E+00	0.0000	4.857E-03	0.0772	8.190E-06	0.0001	2.692E-07	0.0000	5.184E-05	0.0008
Pu-239	8.461E-06	0.0001	1.142E-03	0.0182	0.000E+00	0.0000	2.324E-04	0.0037	5.248E-07	0.0000	1.850E-08	0.0000	4.962E-05	0.0008
Pu-240	5.322E-06	0.0001	1.116E-03	0.0177	0.000E+00	0.0000	2.271E-04	0.0036	5.127E-07	0.0000	1.809E-08	0.0000	4.848E-05	0.0008
Tc-99	3.470E-06	0.0001	2.139E-08	0.0000	0.000E+00	0.0000	8.582E-04	0.0136	5.003E-08	0.0000	1.360E-06	0.0000	1.976E-08	0.0000
U-234	5.911E-05	0.0009	3.508E-04	0.0056	0.000E+00	0.0000	6.964E-05	0.0011	5.814E-07	0.0000	9.408E-07	0.0000	3.972E-06	0.0001
U-235	2.118E-02	0.3369	4.484E-04	0.0071	0.000E+00	0.0000	1.142E-04	0.0018	5.505E-07	0.0000	8.881E-07	0.0000	5.842E-06	0.0001
U-238	3.908E-03	0.0622	3.121E-04	0.0050	0.000E+00	0.0000	6.486E-05	0.0010	5.506E-07	0.0000	8.905E-07	0.0000	3.742E-06	0.0001
Total	5.079E-02	0.8078	5.304E-03	0.0844	0.000E+00	0.0000	6.573E-03	0.1045	1.113E-05	0.0002	4.410E-06	0.0001	1.954E-04	0.0031

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.778E-03	0.0283
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.088E-02	0.4911
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.433E-03	0.0228
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.397E-03	0.0222
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.631E-04	0.0137
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.851E-04	0.0077
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.175E-02	0.3459
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.290E-03	0.0682
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.288E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.812E-04	0.0052	2.402E-04	0.0045	0.000E+00	0.0000	4.920E-05	0.0009	5.590E-08	0.0000	7.844E-09	0.0000	1.037E-05	0.0002
Np-237	1.568E-02	0.2915	7.591E-04	0.0141	0.000E+00	0.0000	3.074E-03	0.0571	5.185E-06	0.0001	1.727E-07	0.0000	3.283E-05	0.0006
Pu-239	8.227E-06	0.0002	1.108E-03	0.0206	0.000E+00	0.0000	2.256E-04	0.0042	5.094E-07	0.0000	1.796E-08	0.0000	4.816E-05	0.0009
Pu-240	4.894E-06	0.0001	1.026E-03	0.0191	0.000E+00	0.0000	2.088E-04	0.0039	4.715E-07	0.0000	1.665E-08	0.0000	4.458E-05	0.0008
Tc-99	3.106E-06	0.0001	1.914E-08	0.0000	0.000E+00	0.0000	7.682E-04	0.0143	4.478E-08	0.0000	1.218E-06	0.0000	1.769E-08	0.0000
U-234	4.737E-04	0.0088	3.396E-04	0.0063	0.000E+00	0.0000	7.905E-05	0.0015	5.763E-07	0.0000	9.394E-07	0.0000	4.006E-06	0.0001
U-235	2.107E-02	0.3916	7.340E-04	0.0136	0.000E+00	0.0000	2.231E-04	0.0041	5.330E-07	0.0000	8.544E-07	0.0000	1.069E-05	0.0002
U-238	3.730E-03	0.0693	2.985E-04	0.0055	0.000E+00	0.0000	6.203E-05	0.0012	5.265E-07	0.0000	8.516E-07	0.0000	3.579E-06	0.0001
Total	4.125E-02	0.7668	4.506E-03	0.0838	0.000E+00	0.0000	4.690E-03	0.0872	7.902E-06	0.0001	4.078E-06	0.0001	1.542E-04	0.0029

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.079E-07	0.0000	1.553E-08	0.0000	0.000E+00	0.0000	1.888E-11	0.0000	1.400E-13	0.0000	1.176E-14	0.0000	5.815E-04	0.0108
Np-237	3.064E-03	0.0570	1.166E-04	0.0022	0.000E+00	0.0000	1.418E-07	0.0000	1.052E-09	0.0000	8.838E-11	0.0000	2.273E-02	0.4226
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.391E-03	0.0259
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.285E-03	0.0239
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.726E-04	0.0144
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.979E-04	0.0167
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.204E-02	0.4096
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.095E-03	0.0761
Total	3.064E-03	0.0570	1.167E-04	0.0022	0.000E+00	0.0000	1.418E-07	0.0000	1.052E-09	0.0000	8.840E-11	0.0000	5.379E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.874E-03	2.870E-03	2.860E-03	2.829E-03	2.739E-03	2.448E-03	1.776E-03	5.770E-04
Am-241	Np-237+D	1.000E+00	6.027E-09	1.817E-08	4.237E-08	1.262E-07	3.586E-07	1.092E-06	2.614E-06	4.507E-06
Am-241	U-233	1.000E+00	1.201E-16	8.142E-16	4.235E-15	3.739E-14	3.096E-13	3.181E-12	2.444E-11	1.713E-10
Am-241	Th-229+D	1.000E+00	2.746E-19	4.111E-18	4.788E-17	1.264E-15	3.055E-14	1.048E-12	2.488E-11	6.210E-10
Am-241	ΣDSR (j)		2.874E-03	2.870E-03	2.861E-03	2.829E-03	2.739E-03	2.449E-03	1.778E-03	5.815E-04
Np-237+D	Np-237+D	1.000E+00	3.757E-02	3.754E-02	3.749E-02	3.732E-02	3.684E-02	3.519E-02	3.088E-02	2.273E-02
Np-237+D	U-233	1.000E+00	1.092E-09	3.195E-09	7.389E-09	2.202E-08	6.342E-08	2.037E-07	5.669E-07	1.584E-06
Np-237+D	Th-229+D	1.000E+00	3.390E-12	2.370E-11	1.252E-10	1.117E-09	9.369E-09	9.979E-08	8.454E-07	7.803E-06
Np-237+D	ΣDSR (j)		3.757E-02	3.754E-02	3.749E-02	3.732E-02	3.684E-02	3.519E-02	3.088E-02	2.273E-02
Pu-239	Pu-239	1.000E+00	1.451E-03	1.451E-03	1.451E-03	1.451E-03	1.449E-03	1.445E-03	1.433E-03	1.391E-03
Pu-239	U-235+D	1.000E+00	1.067E-11	3.201E-11	7.468E-11	2.240E-10	6.498E-10	2.133E-09	6.308E-09	2.022E-08
Pu-239	Pa-231	1.000E+00	5.347E-17	3.800E-16	2.022E-15	1.814E-14	1.530E-13	1.656E-12	1.467E-11	1.574E-10
Pu-239	Ac-227+D	1.000E+00	2.066E-18	3.056E-17	3.499E-16	8.774E-15	1.855E-13	4.371E-12	5.597E-11	6.940E-10
Pu-239	ΣDSR (j)		1.451E-03	1.451E-03	1.451E-03	1.451E-03	1.449E-03	1.445E-03	1.433E-03	1.391E-03
Pu-240	Pu-240	4.950E-08	7.168E-11	7.167E-11	7.165E-11	7.159E-11	7.142E-11	7.083E-11	6.915E-11	6.359E-11
Pu-240	Pu-240	1.000E+00	1.448E-03	1.448E-03	1.448E-03	1.446E-03	1.443E-03	1.431E-03	1.397E-03	1.285E-03
Pu-240	U-236	1.000E+00	6.108E-12	1.841E-11	4.300E-11	1.290E-10	3.742E-10	1.225E-09	3.595E-09	1.121E-08
Pu-240	Th-232	1.000E+00	1.145E-21	7.968E-21	4.201E-20	3.752E-19	3.158E-18	3.413E-17	3.014E-16	3.199E-15
Pu-240	Ra-228+D	1.000E+00	1.126E-21	1.652E-20	1.826E-19	4.027E-18	6.436E-17	9.836E-16	9.686E-15	1.069E-13
Pu-240	Th-228+D	1.000E+00	1.232E-22	3.517E-21	7.488E-20	3.428E-18	8.188E-17	1.465E-15	1.503E-14	1.680E-13
Pu-240	ΣDSR (j)		1.448E-03	1.448E-03	1.448E-03	1.446E-03	1.443E-03	1.431E-03	1.397E-03	1.285E-03
Tc-99	Tc-99	1.000E+00	9.051E-04	9.050E-04	9.047E-04	9.037E-04	9.008E-04	8.909E-04	8.631E-04	7.726E-04
U-234	U-234	1.000E+00	4.435E-04	4.435E-04	4.434E-04	4.432E-04	4.426E-04	4.404E-04	4.343E-04	4.136E-04
U-234	Th-230	1.000E+00	4.342E-09	1.297E-08	3.023E-08	9.061E-08	2.629E-07	8.640E-07	2.563E-06	8.302E-06
U-234	Ra-226+D	1.000E+00	1.855E-10	1.300E-09	6.871E-09	6.141E-08	5.161E-07	5.536E-06	4.785E-05	4.723E-04
U-234	Pb-210+D	1.000E+00	3.151E-14	3.217E-13	2.792E-12	5.712E-11	1.116E-09	2.549E-08	3.184E-07	3.637E-06
U-234	ΣDSR (j)		4.435E-04	4.435E-04	4.435E-04	4.434E-04	4.434E-04	4.469E-04	4.851E-04	8.979E-04
U-235+D	U-235+D	1.000E+00	2.167E-02	2.167E-02	2.166E-02	2.165E-02	2.163E-02	2.152E-02	2.124E-02	2.027E-02
U-235+D	Pa-231	1.000E+00	1.645E-07	4.989E-07	1.168E-06	3.509E-06	1.019E-05	3.346E-05	9.910E-05	3.189E-04
U-235+D	Ac-227+D	1.000E+00	8.352E-09	5.758E-08	2.974E-07	2.473E-06	1.722E-05	1.100E-04	4.165E-04	1.450E-03
U-235+D	ΣDSR (j)		2.167E-02	2.167E-02	2.167E-02	2.166E-02	2.165E-02	2.167E-02	2.175E-02	2.204E-02
U-238	U-238	5.400E-05	2.105E-08	2.105E-08	2.105E-08	2.104E-08	2.101E-08	2.091E-08	2.064E-08	1.969E-08
U-238+D	U-238+D	9.999E-01	4.377E-03	4.377E-03	4.376E-03	4.374E-03	4.368E-03	4.348E-03	4.290E-03	4.094E-03
U-238+D	U-234	9.999E-01	6.286E-10	1.886E-09	4.400E-09	1.319E-08	3.827E-08	1.255E-07	3.701E-07	1.175E-06
U-238+D	Th-230	9.999E-01	4.118E-15	2.867E-14	1.511E-13	1.350E-12	1.137E-11	1.230E-10	1.089E-09	1.167E-08
U-238+D	Ra-226+D	9.999E-01	1.314E-16	1.973E-15	2.303E-14	6.103E-13	1.489E-11	5.272E-10	1.369E-08	4.576E-07
U-238+D	Pb-210+D	9.999E-01	2.019E-20	4.242E-19	7.729E-18	4.500E-16	2.558E-14	2.046E-12	8.346E-11	3.417E-09
U-238+D	ΣDSR (j)		4.377E-03	4.377E-03	4.376E-03	4.374E-03	4.368E-03	4.348E-03	4.290E-03	4.095E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 1 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		8.698E+03	8.712E+03	8.740E+03	8.838E+03	9.126E+03	1.021E+04	1.406E+04	4.299E+04
Np-237		6.655E+02	6.659E+02	6.668E+02	6.698E+02	6.787E+02	7.104E+02	8.096E+02	1.100E+03
Pu-239		1.723E+04	1.723E+04	1.723E+04	1.723E+04	1.725E+04	1.730E+04	1.745E+04	1.798E+04
Pu-240		1.726E+04	1.727E+04	1.727E+04	1.728E+04	1.733E+04	1.747E+04	1.790E+04	1.946E+04
Tc-99		2.762E+04	2.763E+04	2.763E+04	2.766E+04	2.775E+04	2.806E+04	2.896E+04	3.236E+04
U-234		5.637E+04	5.637E+04	5.638E+04	5.639E+04	5.639E+04	5.595E+04	5.154E+04	2.784E+04
U-235		1.154E+03	1.154E+03	1.154E+03	1.154E+03	1.155E+03	1.154E+03	1.149E+03	1.135E+03
U-238		5.712E+03	5.712E+03	5.713E+03	5.715E+03	5.723E+03	5.750E+03	5.827E+03	6.104E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	2.874E-03	8.698E+03	2.874E-03	8.698E+03
Np-237	1.000E+00	0.000E+00	3.757E-02	6.655E+02	3.757E-02	6.655E+02
Pu-239	1.000E+00	0.000E+00	1.451E-03	1.723E+04	1.451E-03	1.723E+04
Pu-240	1.000E+00	0.000E+00	1.448E-03	1.726E+04	1.448E-03	1.726E+04
Tc-99	1.000E+00	0.000E+00	9.051E-04	2.762E+04	9.051E-04	2.762E+04
U-234	1.000E+00	1.000E+03	8.979E-04	2.784E+04	4.435E-04	5.637E+04
U-235	1.000E+00	1.000E+03	2.204E-02	1.135E+03	2.167E-02	1.154E+03
U-238	1.000E+00	0.000E+00	4.377E-03	5.712E+03	4.377E-03	5.712E+03

Summary : Hematite - Uniform CSM - AF 1 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	2.874E-03	2.870E-03	2.860E-03	2.829E-03	2.739E-03	2.448E-03	1.776E-03	5.770E-04
Np-237	Am-241	1.000E+00	6.027E-09	1.817E-08	4.237E-08	1.262E-07	3.586E-07	1.092E-06	2.614E-06	4.507E-06
Np-237	Np-237	1.000E+00	3.757E-02	3.754E-02	3.749E-02	3.732E-02	3.684E-02	3.519E-02	3.088E-02	2.273E-02
Np-237	ΣDOSE (j)		3.757E-02	3.754E-02	3.749E-02	3.732E-02	3.684E-02	3.519E-02	3.088E-02	2.273E-02
U-233	Am-241	1.000E+00	1.201E-16	8.142E-16	4.235E-15	3.739E-14	3.096E-13	3.181E-12	2.444E-11	1.713E-10
U-233	Np-237	1.000E+00	1.092E-09	3.195E-09	7.389E-09	2.202E-08	6.342E-08	2.037E-07	5.669E-07	1.584E-06
U-233	ΣDOSE (j)		1.092E-09	3.195E-09	7.389E-09	2.202E-08	6.342E-08	2.037E-07	5.670E-07	1.584E-06
Th-229	Am-241	1.000E+00	2.746E-19	4.111E-18	4.788E-17	1.264E-15	3.055E-14	1.048E-12	2.488E-11	6.210E-10
Th-229	Np-237	1.000E+00	3.390E-12	2.370E-11	1.252E-10	1.117E-09	9.369E-09	9.979E-08	8.454E-07	7.803E-06
Th-229	ΣDOSE (j)		3.390E-12	2.370E-11	1.252E-10	1.117E-09	9.369E-09	9.980E-08	8.454E-07	7.803E-06
Pu-239	Pu-239	1.000E+00	1.451E-03	1.451E-03	1.451E-03	1.451E-03	1.449E-03	1.445E-03	1.433E-03	1.391E-03
U-235	Pu-239	1.000E+00	1.067E-11	3.201E-11	7.468E-11	2.240E-10	6.498E-10	2.133E-09	6.308E-09	2.022E-08
U-235	U-235	1.000E+00	2.167E-02	2.167E-02	2.166E-02	2.165E-02	2.163E-02	2.152E-02	2.124E-02	2.027E-02
U-235	ΣDOSE (j)		2.167E-02	2.167E-02	2.166E-02	2.165E-02	2.163E-02	2.152E-02	2.124E-02	2.027E-02
Pa-231	Pu-239	1.000E+00	5.347E-17	3.800E-16	2.022E-15	1.814E-14	1.530E-13	1.656E-12	1.467E-11	1.574E-10
Pa-231	U-235	1.000E+00	1.645E-07	4.989E-07	1.168E-06	3.509E-06	1.019E-05	3.346E-05	9.910E-05	3.189E-04
Pa-231	ΣDOSE (j)		1.645E-07	4.989E-07	1.168E-06	3.509E-06	1.019E-05	3.346E-05	9.910E-05	3.189E-04
Ac-227	Pu-239	1.000E+00	2.066E-18	3.056E-17	3.499E-16	8.774E-15	1.855E-13	4.371E-12	5.597E-11	6.940E-10
Ac-227	U-235	1.000E+00	8.352E-09	5.758E-08	2.974E-07	2.473E-06	1.722E-05	1.100E-04	4.165E-04	1.450E-03
Ac-227	ΣDOSE (j)		8.352E-09	5.758E-08	2.974E-07	2.473E-06	1.722E-05	1.100E-04	4.165E-04	1.450E-03
Pu-240	Pu-240	4.950E-08	7.168E-11	7.167E-11	7.165E-11	7.159E-11	7.142E-11	7.083E-11	6.915E-11	6.359E-11
Pu-240	Pu-240	1.000E+00	1.448E-03	1.448E-03	1.448E-03	1.446E-03	1.443E-03	1.431E-03	1.397E-03	1.285E-03
Pu-240	ΣDOSE (j)		1.448E-03	1.448E-03	1.448E-03	1.446E-03	1.443E-03	1.431E-03	1.397E-03	1.285E-03
U-236	Pu-240	1.000E+00	6.108E-12	1.841E-11	4.300E-11	1.290E-10	3.742E-10	1.225E-09	3.595E-09	1.121E-08
Th-232	Pu-240	1.000E+00	1.145E-21	7.968E-21	4.201E-20	3.752E-19	3.158E-18	3.413E-17	3.014E-16	3.199E-15
Ra-228	Pu-240	1.000E+00	1.126E-21	1.652E-20	1.826E-19	4.027E-18	6.436E-17	9.836E-16	9.686E-15	1.069E-13
Th-228	Pu-240	1.000E+00	1.232E-22	3.517E-21	7.488E-20	3.428E-18	8.188E-17	1.465E-15	1.503E-14	1.680E-13
Tc-99	Tc-99	1.000E+00	9.051E-04	9.050E-04	9.047E-04	9.037E-04	9.008E-04	8.909E-04	8.631E-04	7.726E-04
U-234	U-234	1.000E+00	4.435E-04	4.435E-04	4.434E-04	4.432E-04	4.426E-04	4.404E-04	4.343E-04	4.136E-04
U-234	U-238	9.999E-01	6.286E-10	1.886E-09	4.400E-09	1.319E-08	3.827E-08	1.255E-07	3.701E-07	1.175E-06
U-234	ΣDOSE (j)		4.435E-04	4.435E-04	4.434E-04	4.432E-04	4.426E-04	4.406E-04	4.347E-04	4.148E-04
Th-230	U-234	1.000E+00	4.342E-09	1.297E-08	3.023E-08	9.061E-08	2.629E-07	8.640E-07	2.563E-06	8.302E-06
Th-230	U-238	9.999E-01	4.118E-15	2.867E-14	1.511E-13	1.350E-12	1.137E-11	1.230E-10	1.089E-09	1.167E-08
Th-230	ΣDOSE (j)		4.342E-09	1.297E-08	3.023E-08	9.062E-08	2.630E-07	8.641E-07	2.564E-06	8.313E-06

Summary : Hematite - Uniform CSM - AF 1 m²

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.855E-10	1.300E-09	6.871E-09	6.141E-08	5.161E-07	5.536E-06	4.785E-05	4.723E-04
Ra-226	U-238	9.999E-01	1.314E-16	1.973E-15	2.303E-14	6.103E-13	1.489E-11	5.272E-10	1.369E-08	4.576E-07
Ra-226	ΣDOSE(j)		1.855E-10	1.300E-09	6.871E-09	6.141E-08	5.161E-07	5.537E-06	4.786E-05	4.728E-04
Pb-210	U-234	1.000E+00	3.151E-14	3.217E-13	2.792E-12	5.712E-11	1.116E-09	2.549E-08	3.184E-07	3.637E-06
Pb-210	U-238	9.999E-01	2.019E-20	4.242E-19	7.729E-18	4.500E-16	2.558E-14	2.046E-12	8.346E-11	3.417E-09
Pb-210	ΣDOSE(j)		3.151E-14	3.217E-13	2.792E-12	5.712E-11	1.116E-09	2.549E-08	3.185E-07	3.640E-06
U-238	U-238	5.400E-05	2.105E-08	2.105E-08	2.105E-08	2.104E-08	2.101E-08	2.091E-08	2.064E-08	1.969E-08
U-238	U-238	9.999E-01	4.377E-03	4.377E-03	4.376E-03	4.374E-03	4.368E-03	4.348E-03	4.290E-03	4.094E-03
U-238	ΣDOSE(j)		4.377E-03	4.377E-03	4.376E-03	4.374E-03	4.368E-03	4.348E-03	4.290E-03	4.094E-03

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM - AF 1 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 1 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.12 seconds

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Summary : Hematite - Uniform CSM - AF 10 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Uniform CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Uniform CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Uniform CSM - AF 10 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH (9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH (10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH (12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH (13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH (14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH (15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Uniform CSM - AF 10 m^2

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.396E-01	3.395E-01	3.392E-01	3.381E-01	3.352E-01	3.254E-01	3.004E-01	2.698E-01
M(t):	1.359E-02	1.358E-02	1.357E-02	1.353E-02	1.341E-02	1.302E-02	1.202E-02	1.079E-02

Maximum TDOSE(t): 3.396E-01 mrem/yr at t = 0.000E+00 years

Summary : Hematite - Uniform CSM - AF 10 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.681E-03	0.0167	1.549E-03	0.0046	0.000E+00	0.0000	2.419E-03	0.0071	2.731E-06	0.0000	3.890E-07	0.0000	5.163E-04	0.0015
Np-237	1.340E-01	0.3946	1.885E-03	0.0055	0.000E+00	0.0000	5.908E-02	0.1740	9.962E-05	0.0003	3.260E-06	0.0000	6.306E-04	0.0019
Pu-239	3.725E-05	0.0001	1.498E-03	0.0044	0.000E+00	0.0000	2.354E-03	0.0069	5.315E-06	0.0000	1.874E-07	0.0000	5.025E-04	0.0015
Pu-240	2.171E-05	0.0001	1.498E-03	0.0044	0.000E+00	0.0000	2.354E-03	0.0069	5.315E-06	0.0000	1.874E-07	0.0000	5.025E-04	0.0015
Tc-99	1.588E-05	0.0000	2.905E-08	0.0000	0.000E+00	0.0000	9.000E-03	0.0265	5.246E-07	0.0000	1.427E-05	0.0000	2.072E-07	0.0000
U-234	5.273E-05	0.0002	4.609E-04	0.0014	0.000E+00	0.0000	6.963E-04	0.0021	5.911E-06	0.0000	9.560E-06	0.0000	4.017E-05	0.0001
U-235	9.442E-02	0.2780	4.295E-04	0.0013	0.000E+00	0.0000	6.585E-04	0.0019	5.585E-06	0.0000	9.032E-06	0.0000	3.797E-05	0.0001
U-238	1.798E-02	0.0530	4.121E-04	0.0012	0.000E+00	0.0000	6.611E-04	0.0019	5.613E-06	0.0000	9.077E-06	0.0000	3.814E-05	0.0001
Total	2.522E-01	0.7427	7.732E-03	0.0228	0.000E+00	0.0000	7.722E-02	0.2274	1.306E-04	0.0004	4.596E-05	0.0001	2.268E-03	0.0067

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.017E-02	0.0299
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.957E-01	0.5763
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.397E-03	0.0129
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.382E-03	0.0129
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.030E-03	0.0266
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.266E-03	0.0037
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.556E-02	0.2814
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.911E-02	0.0563
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.396E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.672E-03	0.0167	1.546E-03	0.0046	0.000E+00	0.0000	2.415E-03	0.0071	2.726E-06	0.0000	3.884E-07	0.0000	5.155E-04	0.0015
Np-237	1.339E-01	0.3945	1.884E-03	0.0055	0.000E+00	0.0000	5.904E-02	0.1739	9.956E-05	0.0003	3.258E-06	0.0000	6.302E-04	0.0019
Pu-239	3.725E-05	0.0001	1.498E-03	0.0044	0.000E+00	0.0000	2.354E-03	0.0069	5.315E-06	0.0000	1.874E-07	0.0000	5.025E-04	0.0015
Pu-240	2.171E-05	0.0001	1.498E-03	0.0044	0.000E+00	0.0000	2.354E-03	0.0069	5.314E-06	0.0000	1.874E-07	0.0000	5.024E-04	0.0015
Tc-99	1.587E-05	0.0000	2.904E-08	0.0000	0.000E+00	0.0000	8.998E-03	0.0265	5.246E-07	0.0000	1.426E-05	0.0000	2.072E-07	0.0000
U-234	5.273E-05	0.0002	4.608E-04	0.0014	0.000E+00	0.0000	6.963E-04	0.0021	5.911E-06	0.0000	9.560E-06	0.0000	4.017E-05	0.0001
U-235	9.442E-02	0.2781	4.296E-04	0.0013	0.000E+00	0.0000	6.600E-04	0.0019	5.584E-06	0.0000	9.031E-06	0.0000	3.800E-05	0.0001
U-238	1.798E-02	0.0530	4.121E-04	0.0012	0.000E+00	0.0000	6.611E-04	0.0019	5.612E-06	0.0000	9.077E-06	0.0000	3.814E-05	0.0001
Total	2.521E-01	0.7427	7.728E-03	0.0228	0.000E+00	0.0000	7.718E-02	0.2274	1.305E-04	0.0004	4.595E-05	0.0001	2.267E-03	0.0067

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.015E-02	0.0299
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.956E-01	0.5761
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.397E-03	0.0130
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.381E-03	0.0129
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.029E-03	0.0266
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.265E-03	0.0037
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.556E-02	0.2815
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.911E-02	0.0563
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.395E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.654E-03	0.0167	1.542E-03	0.0045	0.000E+00	0.0000	2.407E-03	0.0071	2.718E-06	0.0000	3.871E-07	0.0000	5.138E-04	0.0015
Np-237	1.338E-01	0.3943	1.881E-03	0.0055	0.000E+00	0.0000	5.897E-02	0.1739	9.943E-05	0.0003	3.254E-06	0.0000	6.294E-04	0.0019
Pu-239	3.725E-05	0.0001	1.498E-03	0.0044	0.000E+00	0.0000	2.354E-03	0.0069	5.315E-06	0.0000	1.874E-07	0.0000	5.025E-04	0.0015
Pu-240	2.170E-05	0.0001	1.497E-03	0.0044	0.000E+00	0.0000	2.353E-03	0.0069	5.313E-06	0.0000	1.873E-07	0.0000	5.023E-04	0.0015
Tc-99	1.587E-05	0.0000	2.903E-08	0.0000	0.000E+00	0.0000	8.995E-03	0.0265	5.244E-07	0.0000	1.426E-05	0.0000	2.071E-07	0.0000
U-234	5.275E-05	0.0002	4.608E-04	0.0014	0.000E+00	0.0000	6.962E-04	0.0021	5.910E-06	0.0000	9.558E-06	0.0000	4.017E-05	0.0001
U-235	9.441E-02	0.2783	4.298E-04	0.0013	0.000E+00	0.0000	6.629E-04	0.0020	5.584E-06	0.0000	9.030E-06	0.0000	3.806E-05	0.0001
U-238	1.798E-02	0.0530	4.120E-04	0.0012	0.000E+00	0.0000	6.610E-04	0.0019	5.612E-06	0.0000	9.076E-06	0.0000	3.814E-05	0.0001
Total	2.519E-01	0.7427	7.720E-03	0.0228	0.000E+00	0.0000	7.710E-02	0.2273	1.304E-04	0.0004	4.594E-05	0.0001	2.265E-03	0.0067

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.012E-02	0.0298
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.953E-01	0.5759
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.397E-03	0.0130
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.380E-03	0.0129
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.026E-03	0.0266
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.265E-03	0.0037
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.555E-02	0.2817
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.911E-02	0.0563
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.392E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.591E-03	0.0165	1.524E-03	0.0045	0.000E+00	0.0000	2.380E-03	0.0070	2.687E-06	0.0000	3.828E-07	0.0000	5.081E-04	0.0015
Np-237	1.331E-01	0.3938	1.873E-03	0.0055	0.000E+00	0.0000	5.870E-02	0.1736	9.897E-05	0.0003	3.240E-06	0.0000	6.265E-04	0.0019
Pu-239	3.723E-05	0.0001	1.497E-03	0.0044	0.000E+00	0.0000	2.353E-03	0.0070	5.313E-06	0.0000	1.873E-07	0.0000	5.023E-04	0.0015
Pu-240	2.169E-05	0.0001	1.496E-03	0.0044	0.000E+00	0.0000	2.351E-03	0.0070	5.309E-06	0.0000	1.872E-07	0.0000	5.019E-04	0.0015
Tc-99	1.585E-05	0.0000	2.900E-08	0.0000	0.000E+00	0.0000	8.985E-03	0.0266	5.238E-07	0.0000	1.424E-05	0.0000	2.069E-07	0.0000
U-234	5.298E-05	0.0002	4.606E-04	0.0014	0.000E+00	0.0000	6.959E-04	0.0021	5.907E-06	0.0000	9.554E-06	0.0000	4.015E-05	0.0001
U-235	9.437E-02	0.2791	4.309E-04	0.0013	0.000E+00	0.0000	6.733E-04	0.0020	5.581E-06	0.0000	9.026E-06	0.0000	3.833E-05	0.0001
U-238	1.797E-02	0.0532	4.118E-04	0.0012	0.000E+00	0.0000	6.607E-04	0.0020	5.609E-06	0.0000	9.072E-06	0.0000	3.812E-05	0.0001
Total	2.512E-01	0.7429	7.693E-03	0.0228	0.000E+00	0.0000	7.680E-02	0.2271	1.299E-04	0.0004	4.589E-05	0.0001	2.256E-03	0.0067

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.001E-02	0.0296
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E-01	0.5751
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.395E-03	0.0130
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.376E-03	0.0129
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.016E-03	0.0267
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.265E-03	0.0037
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.553E-02	0.2825
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.910E-02	0.0565
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.381E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.415E-03	0.0162	1.476E-03	0.0044	0.000E+00	0.0000	2.306E-03	0.0069	2.603E-06	0.0000	3.707E-07	0.0000	4.920E-04	0.0015
Np-237	1.314E-01	0.3921	1.848E-03	0.0055	0.000E+00	0.0000	5.794E-02	0.1728	9.769E-05	0.0003	3.198E-06	0.0000	6.184E-04	0.0018
Pu-239	3.721E-05	0.0001	1.496E-03	0.0045	0.000E+00	0.0000	2.351E-03	0.0070	5.308E-06	0.0000	1.872E-07	0.0000	5.019E-04	0.0015
Pu-240	2.163E-05	0.0001	1.492E-03	0.0045	0.000E+00	0.0000	2.346E-03	0.0070	5.296E-06	0.0000	1.867E-07	0.0000	5.007E-04	0.0015
Tc-99	1.580E-05	0.0000	2.891E-08	0.0000	0.000E+00	0.0000	8.957E-03	0.0267	5.222E-07	0.0000	1.420E-05	0.0000	2.063E-07	0.0000
U-234	5.500E-05	0.0002	4.602E-04	0.0014	0.000E+00	0.0000	6.951E-04	0.0021	5.899E-06	0.0000	9.541E-06	0.0000	4.011E-05	0.0001
U-235	9.430E-02	0.2813	4.369E-04	0.0013	0.000E+00	0.0000	7.042E-04	0.0021	5.575E-06	0.0000	9.016E-06	0.0000	3.933E-05	0.0001
U-238	1.795E-02	0.0535	4.113E-04	0.0012	0.000E+00	0.0000	6.599E-04	0.0020	5.602E-06	0.0000	9.060E-06	0.0000	3.807E-05	0.0001
Total	2.492E-01	0.7435	7.621E-03	0.0227	0.000E+00	0.0000	7.595E-02	0.2266	1.285E-04	0.0004	4.576E-05	0.0001	2.231E-03	0.0067

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.692E-03	0.0289
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.919E-01	0.5726
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.392E-03	0.0131
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.366E-03	0.0130
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.988E-03	0.0268
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.266E-03	0.0038
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.550E-02	0.2849
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.907E-02	0.0569
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.352E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.842E-03	0.0149	1.319E-03	0.0041	0.000E+00	0.0000	2.062E-03	0.0063	2.328E-06	0.0000	3.314E-07	0.0000	4.397E-04	0.0014
Np-237	1.255E-01	0.3858	1.766E-03	0.0054	0.000E+00	0.0000	5.535E-02	0.1701	9.332E-05	0.0003	3.058E-06	0.0000	5.907E-04	0.0018
Pu-239	3.710E-05	0.0001	1.491E-03	0.0046	0.000E+00	0.0000	2.344E-03	0.0072	5.293E-06	0.0000	1.866E-07	0.0000	5.004E-04	0.0015
Pu-240	2.145E-05	0.0001	1.480E-03	0.0045	0.000E+00	0.0000	2.326E-03	0.0071	5.252E-06	0.0000	1.852E-07	0.0000	4.965E-04	0.0015
Tc-99	1.563E-05	0.0000	2.859E-08	0.0000	0.000E+00	0.0000	8.858E-03	0.0272	5.164E-07	0.0000	1.404E-05	0.0000	2.040E-07	0.0000
U-234	7.758E-05	0.0002	4.587E-04	0.0014	0.000E+00	0.0000	6.933E-04	0.0021	5.873E-06	0.0000	9.499E-06	0.0000	3.998E-05	0.0001
U-235	9.420E-02	0.2895	4.708E-04	0.0014	0.000E+00	0.0000	8.173E-04	0.0025	5.556E-06	0.0000	8.981E-06	0.0000	4.400E-05	0.0001
U-238	1.786E-02	0.0549	4.095E-04	0.0013	0.000E+00	0.0000	6.569E-04	0.0020	5.577E-06	0.0000	9.020E-06	0.0000	3.790E-05	0.0001
Total	2.426E-01	0.7455	7.396E-03	0.0227	0.000E+00	0.0000	7.310E-02	0.2246	1.237E-04	0.0004	4.530E-05	0.0001	2.149E-03	0.0066

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.665E-03	0.0266
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.833E-01	0.5634
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.379E-03	0.0135
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.329E-03	0.0133
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.889E-03	0.0273
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.285E-03	0.0039
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.555E-02	0.2936
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.898E-02	0.0583
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.254E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.519E-03	0.0117	9.570E-04	0.0032	0.000E+00	0.0000	1.498E-03	0.0050	1.694E-06	0.0000	2.405E-07	0.0000	3.190E-04	0.0011
Np-237	1.102E-01	0.3667	1.550E-03	0.0052	0.000E+00	0.0000	4.857E-02	0.1617	8.190E-05	0.0003	2.692E-06	0.0000	5.184E-04	0.0017
Pu-239	3.681E-05	0.0001	1.479E-03	0.0049	0.000E+00	0.0000	2.324E-03	0.0077	5.248E-06	0.0000	1.850E-07	0.0000	4.962E-04	0.0017
Pu-240	2.095E-05	0.0001	1.445E-03	0.0048	0.000E+00	0.0000	2.271E-03	0.0076	5.128E-06	0.0000	1.809E-07	0.0000	4.848E-04	0.0016
Tc-99	1.514E-05	0.0001	2.770E-08	0.0000	0.000E+00	0.0000	8.582E-03	0.0286	5.003E-07	0.0000	1.360E-05	0.0000	1.976E-07	0.0000
U-234	2.688E-04	0.0009	4.544E-04	0.0015	0.000E+00	0.0000	6.964E-04	0.0023	5.814E-06	0.0000	9.408E-06	0.0000	3.972E-05	0.0001
U-235	9.406E-02	0.3131	5.807E-04	0.0019	0.000E+00	0.0000	1.142E-03	0.0038	5.505E-06	0.0000	8.881E-06	0.0000	5.842E-05	0.0002
U-238	1.763E-02	0.0587	4.043E-04	0.0013	0.000E+00	0.0000	6.486E-04	0.0022	5.506E-06	0.0000	8.905E-06	0.0000	3.742E-05	0.0001
Total	2.257E-01	0.7513	6.870E-03	0.0229	0.000E+00	0.0000	6.573E-02	0.2188	1.113E-04	0.0004	4.410E-05	0.0001	1.954E-03	0.0065

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.295E-03	0.0210
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.609E-01	0.5355
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.342E-03	0.0145
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.227E-03	0.0141
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.612E-03	0.0287
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.475E-03	0.0049
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.586E-02	0.3191
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.873E-02	0.0624
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.004E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.155E-03	0.0043	3.112E-04	0.0012	0.000E+00	0.0000	4.920E-04	0.0018	5.590E-07	0.0000	7.844E-08	0.0000	1.037E-04	0.0004
Np-237	6.975E-02	0.2586	9.833E-04	0.0036	0.000E+00	0.0000	3.074E-02	0.1140	5.185E-05	0.0002	1.727E-06	0.0000	3.283E-04	0.0012
Pu-239	3.579E-05	0.0001	1.435E-03	0.0053	0.000E+00	0.0000	2.256E-03	0.0084	5.094E-06	0.0000	1.796E-07	0.0000	4.816E-04	0.0018
Pu-240	1.926E-05	0.0001	1.329E-03	0.0049	0.000E+00	0.0000	2.088E-03	0.0077	4.715E-06	0.0000	1.665E-07	0.0000	4.458E-04	0.0017
Tc-99	1.355E-05	0.0001	2.479E-08	0.0000	0.000E+00	0.0000	7.682E-03	0.0285	4.478E-07	0.0000	1.218E-05	0.0000	1.769E-07	0.0000
U-234	2.190E-03	0.0081	4.399E-04	0.0016	0.000E+00	0.0000	7.905E-04	0.0029	5.763E-06	0.0000	9.394E-06	0.0000	4.006E-05	0.0001
U-235	9.356E-02	0.3468	9.507E-04	0.0035	0.000E+00	0.0000	2.231E-03	0.0083	5.330E-06	0.0000	8.544E-06	0.0000	1.069E-04	0.0004
U-238	1.682E-02	0.0624	3.867E-04	0.0014	0.000E+00	0.0000	6.203E-04	0.0023	5.265E-06	0.0000	8.516E-06	0.0000	3.579E-05	0.0001
Total	1.836E-01	0.6804	5.836E-03	0.0216	0.000E+00	0.0000	4.690E-02	0.1739	7.902E-05	0.0003	4.078E-05	0.0002	1.542E-03	0.0057

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.079E-06	0.0000	1.553E-07	0.0000	0.000E+00	0.0000	1.888E-09	0.0000	1.400E-11	0.0000	1.176E-12	0.0000	2.067E-03	0.0077
Np-237	3.064E-02	0.1136	1.166E-03	0.0043	0.000E+00	0.0000	1.418E-05	0.0001	1.052E-07	0.0000	8.838E-09	0.0000	1.337E-01	0.4955
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.214E-03	0.0156
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.887E-03	0.0144
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.708E-03	0.0286
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.476E-03	0.0129
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.687E-02	0.3591
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.788E-02	0.0663
Total	3.064E-02	0.1136	1.167E-03	0.0043	0.000E+00	0.0000	1.418E-05	0.0001	1.052E-07	0.0000	8.840E-09	0.0000	2.698E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.017E-02	1.015E-02	1.012E-02	1.001E-02	9.690E-03	8.660E-03	6.281E-03	2.041E-03
Am-241	Np-237+D	1.000E+00	3.113E-08	9.436E-08	2.205E-07	6.574E-07	1.868E-06	5.691E-06	1.362E-05	2.551E-05
Am-241	U-233	1.000E+00	4.011E-16	2.547E-15	1.282E-14	1.111E-13	9.143E-13	9.374E-12	7.196E-11	5.530E-10
Am-241	Th-229+D	1.000E+00	1.141E-18	1.705E-17	1.984E-16	5.235E-15	1.265E-13	4.337E-12	1.030E-10	2.571E-09
Am-241	ΣDSR (j)		1.017E-02	1.015E-02	1.012E-02	1.001E-02	9.692E-03	8.665E-03	6.295E-03	2.067E-03
Np-237+D	Np-237+D	1.000E+00	1.957E-01	1.956E-01	1.953E-01	1.944E-01	1.919E-01	1.833E-01	1.609E-01	1.336E-01
Np-237+D	U-233	1.000E+00	3.505E-09	9.721E-09	2.207E-08	6.513E-08	1.870E-07	5.998E-07	1.669E-06	5.369E-06
Np-237+D	Th-229+D	1.000E+00	1.407E-11	9.821E-11	5.183E-10	4.626E-09	3.879E-08	4.132E-07	3.500E-06	3.231E-05
Np-237+D	ΣDSR (j)		1.957E-01	1.956E-01	1.953E-01	1.944E-01	1.919E-01	1.833E-01	1.609E-01	1.337E-01
Pu-239	Pu-239	1.000E+00	4.397E-03	4.397E-03	4.397E-03	4.395E-03	4.392E-03	4.379E-03	4.341E-03	4.214E-03
Pu-239	U-235+D	1.000E+00	4.704E-11	1.411E-10	3.293E-10	9.877E-10	2.866E-09	9.407E-09	2.782E-08	8.915E-08
Pu-239	Pa-231	1.000E+00	3.313E-16	2.376E-15	1.269E-14	1.141E-13	9.630E-13	1.043E-11	9.238E-11	9.913E-10
Pu-239	Ac-227+D	1.000E+00	7.988E-18	1.168E-16	1.329E-15	3.322E-14	7.015E-13	1.652E-11	2.116E-10	2.623E-09
Pu-239	ΣDSR (j)		4.397E-03	4.397E-03	4.397E-03	4.395E-03	4.392E-03	4.379E-03	4.342E-03	4.214E-03
Pu-240	Pu-240	4.950E-08	2.169E-10	2.169E-10	2.168E-10	2.166E-10	2.161E-10	2.143E-10	2.092E-10	1.924E-10
Pu-240	Pu-240	1.000E+00	4.382E-03	4.381E-03	4.380E-03	4.376E-03	4.366E-03	4.329E-03	4.227E-03	3.887E-03
Pu-240	U-236	1.000E+00	1.704E-11	5.194E-11	1.218E-10	3.662E-10	1.063E-09	3.479E-09	1.021E-08	3.186E-08
Pu-240	Th-232	1.000E+00	2.056E-21	1.396E-20	7.276E-20	6.457E-19	5.424E-18	5.858E-17	5.171E-16	5.489E-15
Pu-240	Ra-228+D	1.000E+00	5.433E-21	7.994E-20	8.852E-19	1.954E-17	3.123E-16	4.773E-15	4.701E-14	5.187E-13
Pu-240	Th-228+D	1.000E+00	5.776E-22	1.647E-20	3.503E-19	1.603E-17	3.829E-16	6.852E-15	7.026E-14	7.856E-13
Pu-240	ΣDSR (j)		4.382E-03	4.381E-03	4.380E-03	4.376E-03	4.366E-03	4.329E-03	4.227E-03	3.887E-03
Tc-99	Tc-99	1.000E+00	9.030E-03	9.029E-03	9.026E-03	9.016E-03	8.988E-03	8.889E-03	8.612E-03	7.708E-03
U-234	U-234	1.000E+00	1.266E-03	1.265E-03	1.265E-03	1.265E-03	1.263E-03	1.257E-03	1.239E-03	1.180E-03
U-234	Th-230	1.000E+00	8.071E-09	2.369E-08	5.489E-08	1.640E-07	4.755E-07	1.562E-06	4.633E-06	1.501E-05
U-234	Ra-226+D	1.000E+00	8.802E-10	6.176E-09	3.267E-08	2.921E-07	2.455E-06	2.634E-05	2.276E-04	2.247E-03
U-234	Pb-210+D	1.000E+00	3.073E-13	3.100E-12	2.657E-11	5.373E-10	1.044E-08	2.380E-07	2.971E-06	3.393E-05
U-234	ΣDSR (j)		1.266E-03	1.265E-03	1.265E-03	1.265E-03	1.266E-03	1.285E-03	1.475E-03	3.476E-03
U-235+D	U-235+D	1.000E+00	9.556E-02	9.555E-02	9.554E-02	9.550E-02	9.537E-02	9.492E-02	9.366E-02	8.938E-02
U-235+D	Pa-231	1.000E+00	1.026E-06	3.130E-06	7.343E-06	2.208E-05	6.414E-05	2.107E-04	6.239E-04	2.008E-03
U-235+D	Ac-227+D	1.000E+00	3.213E-08	2.194E-07	1.128E-06	9.360E-06	6.512E-05	4.157E-04	1.574E-03	5.481E-03
U-235+D	ΣDSR (j)		9.556E-02	9.556E-02	9.555E-02	9.553E-02	9.550E-02	9.555E-02	9.586E-02	9.687E-02
U-238	U-238	5.400E-05	5.967E-08	5.967E-08	5.966E-08	5.963E-08	5.955E-08	5.928E-08	5.849E-08	5.581E-08
U-238+D	U-238+D	9.999E-01	1.911E-02	1.911E-02	1.911E-02	1.910E-02	1.907E-02	1.898E-02	1.873E-02	1.787E-02
U-238+D	U-234	9.999E-01	1.794E-09	5.381E-09	1.255E-08	3.764E-08	1.092E-07	3.581E-07	1.056E-06	3.352E-06
U-238+D	Th-230	9.999E-01	7.776E-15	5.283E-14	2.756E-13	2.447E-12	2.057E-11	2.223E-10	1.968E-09	2.109E-08
U-238+D	Ra-226+D	9.999E-01	6.230E-16	9.371E-15	1.095E-13	2.903E-12	7.082E-11	2.508E-09	6.513E-08	2.177E-06
U-238+D	Pb-210+D	9.999E-01	1.974E-19	4.104E-18	7.386E-17	4.243E-15	2.396E-13	1.911E-11	7.788E-10	3.188E-08
U-238+D	ΣDSR (j)		1.911E-02	1.911E-02	1.911E-02	1.910E-02	1.907E-02	1.898E-02	1.873E-02	1.788E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 10 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		2.459E+03	2.463E+03	2.470E+03	2.498E+03	2.579E+03	2.885E+03	3.972E+03	1.210E+04
Np-237		1.277E+02	1.278E+02	1.280E+02	1.286E+02	1.303E+02	1.364E+02	1.554E+02	1.870E+02
Pu-239		5.685E+03	5.686E+03	5.686E+03	5.688E+03	5.693E+03	5.710E+03	5.758E+03	5.932E+03
Pu-240		5.706E+03	5.706E+03	5.708E+03	5.713E+03	5.726E+03	5.775E+03	5.914E+03	6.432E+03
Tc-99		2.768E+03	2.769E+03	2.770E+03	2.773E+03	2.782E+03	2.813E+03	2.903E+03	3.243E+03
U-234		1.975E+04	1.976E+04	1.976E+04	1.976E+04	1.975E+04	1.946E+04	1.695E+04	7.192E+03
U-235		2.616E+02	2.616E+02	2.616E+02	2.617E+02	2.618E+02	2.616E+02	2.608E+02	2.581E+02
U-238		1.308E+03	1.308E+03	1.308E+03	1.309E+03	1.311E+03	1.317E+03	1.335E+03	1.398E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	1.017E-02	2.459E+03	1.017E-02	2.459E+03
Np-237	1.000E+00	0.000E+00	1.957E-01	1.277E+02	1.957E-01	1.277E+02
Pu-239	1.000E+00	0.000E+00	4.397E-03	5.685E+03	4.397E-03	5.685E+03
Pu-240	1.000E+00	0.000E+00	4.382E-03	5.706E+03	4.382E-03	5.706E+03
Tc-99	1.000E+00	0.000E+00	9.030E-03	2.768E+03	9.030E-03	2.768E+03
U-234	1.000E+00	1.000E+03	3.476E-03	7.192E+03	1.266E-03	1.975E+04
U-235	1.000E+00	1.000E+03	9.687E-02	2.581E+02	9.556E-02	2.616E+02
U-238	1.000E+00	0.000E+00	1.911E-02	1.308E+03	1.911E-02	1.308E+03

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.017E-02	1.015E-02	1.012E-02	1.001E-02	9.690E-03	8.660E-03	6.281E-03	2.041E-03
Np-237	Am-241	1.000E+00	3.113E-08	9.436E-08	2.205E-07	6.574E-07	1.868E-06	5.691E-06	1.362E-05	2.551E-05
Np-237	Np-237	1.000E+00	1.957E-01	1.956E-01	1.953E-01	1.944E-01	1.919E-01	1.833E-01	1.609E-01	1.336E-01
Np-237	ΣDOSE (j)		1.957E-01	1.956E-01	1.953E-01	1.944E-01	1.919E-01	1.833E-01	1.609E-01	1.337E-01
U-233	Am-241	1.000E+00	4.011E-16	2.547E-15	1.282E-14	1.111E-13	9.143E-13	9.374E-12	7.196E-11	5.530E-10
U-233	Np-237	1.000E+00	3.505E-09	9.721E-09	2.207E-08	6.513E-08	1.870E-07	5.998E-07	1.669E-06	5.369E-06
U-233	ΣDOSE (j)		3.505E-09	9.721E-09	2.207E-08	6.513E-08	1.870E-07	5.998E-07	1.669E-06	5.370E-06
Th-229	Am-241	1.000E+00	1.141E-18	1.705E-17	1.984E-16	5.235E-15	1.265E-13	4.337E-12	1.030E-10	2.571E-09
Th-229	Np-237	1.000E+00	1.407E-11	9.821E-11	5.183E-10	4.626E-09	3.879E-08	4.132E-07	3.500E-06	3.231E-05
Th-229	ΣDOSE (j)		1.407E-11	9.821E-11	5.183E-10	4.626E-09	3.879E-08	4.132E-07	3.500E-06	3.231E-05
Pu-239	Pu-239	1.000E+00	4.397E-03	4.397E-03	4.397E-03	4.395E-03	4.392E-03	4.379E-03	4.341E-03	4.214E-03
U-235	Pu-239	1.000E+00	4.704E-11	1.411E-10	3.293E-10	9.877E-10	2.866E-09	9.407E-09	2.782E-08	8.915E-08
U-235	U-235	1.000E+00	9.556E-02	9.555E-02	9.554E-02	9.550E-02	9.537E-02	9.492E-02	9.366E-02	8.938E-02
U-235	ΣDOSE (j)		9.556E-02	9.555E-02	9.554E-02	9.550E-02	9.537E-02	9.492E-02	9.366E-02	8.938E-02
Pa-231	Pu-239	1.000E+00	3.313E-16	2.376E-15	1.269E-14	1.141E-13	9.630E-13	1.043E-11	9.238E-11	9.913E-10
Pa-231	U-235	1.000E+00	1.026E-06	3.130E-06	7.343E-06	2.208E-05	6.414E-05	2.107E-04	6.239E-04	2.008E-03
Pa-231	ΣDOSE (j)		1.026E-06	3.130E-06	7.343E-06	2.208E-05	6.414E-05	2.107E-04	6.239E-04	2.008E-03
Ac-227	Pu-239	1.000E+00	7.988E-18	1.168E-16	1.329E-15	3.322E-14	7.015E-13	1.652E-11	2.116E-10	2.623E-09
Ac-227	U-235	1.000E+00	3.213E-08	2.194E-07	1.128E-06	9.360E-06	6.512E-05	4.157E-04	1.574E-03	5.481E-03
Ac-227	ΣDOSE (j)		3.213E-08	2.194E-07	1.128E-06	9.360E-06	6.512E-05	4.157E-04	1.574E-03	5.481E-03
Pu-240	Pu-240	4.950E-08	2.169E-10	2.169E-10	2.168E-10	2.166E-10	2.161E-10	2.143E-10	2.092E-10	1.924E-10
Pu-240	Pu-240	1.000E+00	4.382E-03	4.381E-03	4.380E-03	4.376E-03	4.366E-03	4.329E-03	4.227E-03	3.887E-03
Pu-240	ΣDOSE (j)		4.382E-03	4.381E-03	4.380E-03	4.376E-03	4.366E-03	4.329E-03	4.227E-03	3.887E-03
U-236	Pu-240	1.000E+00	1.704E-11	5.194E-11	1.218E-10	3.662E-10	1.063E-09	3.479E-09	1.021E-08	3.186E-08
Th-232	Pu-240	1.000E+00	2.056E-21	1.396E-20	7.276E-20	6.457E-19	5.424E-18	5.858E-17	5.171E-16	5.489E-15
Ra-228	Pu-240	1.000E+00	5.433E-21	7.994E-20	8.852E-19	1.954E-17	3.123E-16	4.773E-15	4.701E-14	5.187E-13
Th-228	Pu-240	1.000E+00	5.776E-22	1.647E-20	3.503E-19	1.603E-17	3.829E-16	6.852E-15	7.026E-14	7.856E-13
Tc-99	Tc-99	1.000E+00	9.030E-03	9.029E-03	9.026E-03	9.016E-03	8.988E-03	8.889E-03	8.612E-03	7.708E-03
U-234	U-234	1.000E+00	1.266E-03	1.265E-03	1.265E-03	1.265E-03	1.263E-03	1.257E-03	1.239E-03	1.180E-03
U-234	U-238	9.999E-01	1.794E-09	5.381E-09	1.255E-08	3.764E-08	1.092E-07	3.581E-07	1.056E-06	3.352E-06
U-234	ΣDOSE (j)		1.266E-03	1.265E-03	1.265E-03	1.265E-03	1.263E-03	1.257E-03	1.240E-03	1.184E-03
Th-230	U-234	1.000E+00	8.071E-09	2.369E-08	5.489E-08	1.640E-07	4.755E-07	1.562E-06	4.633E-06	1.501E-05
Th-230	U-238	9.999E-01	7.776E-15	5.283E-14	2.756E-13	2.447E-12	2.057E-11	2.223E-10	1.968E-09	2.109E-08
Th-230	ΣDOSE (j)		8.071E-09	2.369E-08	5.489E-08	1.640E-07	4.755E-07	1.562E-06	4.635E-06	1.503E-05

Summary : Hematite - Uniform CSM - AF 10 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	8.802E-10	6.176E-09	3.267E-08	2.921E-07	2.455E-06	2.634E-05	2.276E-04	2.247E-03
Ra-226	U-238	9.999E-01	6.230E-16	9.371E-15	1.095E-13	2.903E-12	7.082E-11	2.508E-09	6.513E-08	2.177E-06
Ra-226	ΣDOSE(j)		8.802E-10	6.176E-09	3.267E-08	2.921E-07	2.455E-06	2.634E-05	2.277E-04	2.249E-03
Pb-210	U-234	1.000E+00	3.073E-13	3.100E-12	2.657E-11	5.373E-10	1.044E-08	2.380E-07	2.971E-06	3.393E-05
Pb-210	U-238	9.999E-01	1.974E-19	4.104E-18	7.386E-17	4.243E-15	2.396E-13	1.911E-11	7.788E-10	3.188E-08
Pb-210	ΣDOSE(j)		3.073E-13	3.100E-12	2.657E-11	5.373E-10	1.044E-08	2.380E-07	2.972E-06	3.396E-05
U-238	U-238	5.400E-05	5.967E-08	5.967E-08	5.966E-08	5.963E-08	5.955E-08	5.928E-08	5.849E-08	5.581E-08
U-238	U-238	9.999E-01	1.911E-02	1.911E-02	1.911E-02	1.910E-02	1.907E-02	1.898E-02	1.873E-02	1.787E-02
U-238	ΣDOSE(j)		1.911E-02	1.911E-02	1.911E-02	1.910E-02	1.907E-02	1.898E-02	1.873E-02	1.787E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 10 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.28 seconds

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Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH (9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC (10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU (10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS (10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH (10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH (12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH (13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH (14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC (15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU (15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS (15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH (15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	100.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr							
Basic Radiation Dose Limit = 2.500E+01 mrem/yr							
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)							
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	1.228E+00	1.227E+00	1.226E+00	1.222E+00	1.210E+00	1.169E+00	1.064E+00
M(t):	4.912E-02	4.909E-02	4.904E-02	4.887E-02	4.839E-02	4.676E-02	4.257E-02
Maximum TDOSE(t):	1.368E+00 mrem/yr	at t =		595 ± 1 years			

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Am-241	3.548E-03	0.0026	7.697E-04	0.0006	0.000E+00	0.0000	9.362E-03	0.0068	1.060E-05	0.0000	1.499E-06	0.0000	1.987E-03	0.0015
Np-237	1.518E-01	0.1110	1.652E-03	0.0012	0.000E+00	0.0000	4.005E-01	0.2928	6.754E-04	0.0005	2.231E-05	0.0000	4.276E-03	0.0031
Pu-239	5.991E-05	0.0000	1.886E-03	0.0014	0.000E+00	0.0000	2.295E-02	0.0168	5.182E-05	0.0000	1.827E-06	0.0000	4.900E-03	0.0036
Pu-240	3.081E-05	0.0000	1.801E-03	0.0013	0.000E+00	0.0000	2.192E-02	0.0160	4.950E-05	0.0000	1.747E-06	0.0000	4.679E-03	0.0034
Tc-99	2.395E-05	0.0000	3.414E-08	0.0000	0.000E+00	0.0000	8.190E-02	0.0599	4.775E-06	0.0000	1.298E-04	0.0001	1.886E-06	0.0000
U-234	1.475E-03	0.0011	5.788E-04	0.0004	0.000E+00	0.0000	7.217E-03	0.0053	5.765E-05	0.0000	9.350E-05	0.0001	3.965E-04	0.0003
U-235	1.566E-01	0.1145	9.555E-04	0.0007	0.000E+00	0.0000	1.610E-02	0.0118	5.430E-05	0.0000	8.737E-05	0.0001	7.927E-04	0.0006
U-238	2.923E-02	0.0214	5.124E-04	0.0004	0.000E+00	0.0000	6.365E-03	0.0047	5.403E-05	0.0000	8.739E-05	0.0001	3.672E-04	0.0003
Total	3.428E-01	0.2506	8.156E-03	0.0060	0.000E+00	0.0000	5.663E-01	0.4140	9.581E-04	0.0007	4.255E-04	0.0003	1.740E-02	0.0127

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.467E-05	0.0000	5.583E-07	0.0000	0.000E+00	0.0000	6.788E-08	0.0000	5.031E-10	0.0000	4.224E-11	0.0000	1.569E-02	0.0115
Np-237	4.141E-01	0.3027	1.576E-02	0.0115	0.000E+00	0.0000	1.916E-03	0.0014	1.421E-05	0.0000	1.193E-06	0.0000	9.907E-01	0.7243
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.985E-02	0.0218
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.848E-02	0.0208
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.207E-02	0.0600
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.818E-03	0.0072
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.746E-01	0.1277
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.661E-02	0.0268
Total	4.141E-01	0.3027	1.576E-02	0.0115	0.000E+00	0.0000	1.917E-03	0.0014	1.421E-05	0.0000	1.193E-06	0.0000	1.368E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.167E-03	0.0075	2.000E-03	0.0016	0.000E+00	0.0000	2.419E-02	0.0197	2.731E-05	0.0000	3.890E-06	0.0000	5.163E-03	0.0042
Np-237	2.239E-01	0.1824	2.434E-03	0.0020	0.000E+00	0.0000	5.908E-01	0.4812	9.962E-04	0.0008	3.260E-05	0.0000	6.306E-03	0.0051
Pu-239	6.135E-05	0.0000	1.934E-03	0.0016	0.000E+00	0.0000	2.354E-02	0.0192	5.315E-05	0.0000	1.874E-06	0.0000	5.025E-03	0.0041
Pu-240	3.309E-05	0.0000	1.934E-03	0.0016	0.000E+00	0.0000	2.354E-02	0.0192	5.315E-05	0.0000	1.874E-06	0.0000	5.025E-03	0.0041
Tc-99	2.631E-05	0.0000	3.751E-08	0.0000	0.000E+00	0.0000	9.000E-02	0.0733	5.246E-06	0.0000	1.427E-04	0.0001	2.072E-06	0.0000
U-234	8.547E-05	0.0001	5.952E-04	0.0005	0.000E+00	0.0000	6.963E-03	0.0057	5.911E-05	0.0000	9.560E-05	0.0001	4.017E-04	0.0003
U-235	1.575E-01	0.1283	5.547E-04	0.0005	0.000E+00	0.0000	6.585E-03	0.0054	5.585E-05	0.0000	9.032E-05	0.0001	3.797E-04	0.0003
U-238	3.041E-02	0.0248	5.322E-04	0.0004	0.000E+00	0.0000	6.611E-03	0.0054	5.613E-05	0.0000	9.077E-05	0.0001	3.814E-04	0.0003
Total	4.212E-01	0.3431	9.986E-03	0.0081	0.000E+00	0.0000	7.722E-01	0.6289	1.306E-03	0.0011	4.596E-04	0.0004	2.268E-02	0.0185

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.055E-02	0.0330
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.245E-01	0.6715
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.062E-02	0.0249
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.059E-02	0.0249
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.017E-02	0.0734
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.200E-03	0.0067
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.652E-01	0.1345
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.808E-02	0.0310
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.228E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.152E-03	0.0075	1.997E-03	0.0016	0.000E+00	0.0000	2.415E-02	0.0197	2.726E-05	0.0000	3.884E-06	0.0000	5.155E-03	0.0042
Np-237	2.238E-01	0.1823	2.433E-03	0.0020	0.000E+00	0.0000	5.904E-01	0.4811	9.956E-04	0.0008	3.258E-05	0.0000	6.302E-03	0.0051
Pu-239	6.135E-05	0.0000	1.934E-03	0.0016	0.000E+00	0.0000	2.354E-02	0.0192	5.315E-05	0.0000	1.874E-06	0.0000	5.025E-03	0.0041
Pu-240	3.309E-05	0.0000	1.934E-03	0.0016	0.000E+00	0.0000	2.354E-02	0.0192	5.314E-05	0.0000	1.874E-06	0.0000	5.024E-03	0.0041
Tc-99	2.631E-05	0.0000	3.751E-08	0.0000	0.000E+00	0.0000	8.998E-02	0.0733	5.246E-06	0.0000	1.426E-04	0.0001	2.072E-06	0.0000
U-234	8.548E-05	0.0001	5.952E-04	0.0005	0.000E+00	0.0000	6.963E-03	0.0057	5.911E-05	0.0000	9.560E-05	0.0001	4.017E-04	0.0003
U-235	1.575E-01	0.1284	5.548E-04	0.0005	0.000E+00	0.0000	6.600E-03	0.0054	5.584E-05	0.0000	9.031E-05	0.0001	3.800E-04	0.0003
U-238	3.041E-02	0.0248	5.322E-04	0.0004	0.000E+00	0.0000	6.611E-03	0.0054	5.612E-05	0.0000	9.077E-05	0.0001	3.814E-04	0.0003
Total	4.211E-01	0.3431	9.980E-03	0.0081	0.000E+00	0.0000	7.718E-01	0.6289	1.305E-03	0.0011	4.595E-04	0.0004	2.267E-02	0.0185

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.048E-02	0.0330
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.240E-01	0.6714
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.062E-02	0.0249
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.058E-02	0.0249
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.016E-02	0.0735
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.200E-03	0.0067
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.652E-01	0.1346
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.808E-02	0.0310
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.227E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.123E-03	0.0074	1.991E-03	0.0016	0.000E+00	0.0000	2.407E-02	0.0196	2.718E-05	0.0000	3.871E-06	0.0000	5.138E-03	0.0042
Np-237	2.235E-01	0.1823	2.429E-03	0.0020	0.000E+00	0.0000	5.897E-01	0.4809	9.943E-04	0.0008	3.254E-05	0.0000	6.294E-03	0.0051
Pu-239	6.134E-05	0.0001	1.934E-03	0.0016	0.000E+00	0.0000	2.354E-02	0.0192	5.315E-05	0.0000	1.874E-06	0.0000	5.025E-03	0.0041
Pu-240	3.308E-05	0.0000	1.934E-03	0.0016	0.000E+00	0.0000	2.353E-02	0.0192	5.313E-05	0.0000	1.873E-06	0.0000	5.023E-03	0.0041
Tc-99	2.630E-05	0.0000	3.750E-08	0.0000	0.000E+00	0.0000	8.995E-02	0.0734	5.244E-06	0.0000	1.426E-04	0.0001	2.071E-06	0.0000
U-234	8.551E-05	0.0001	5.951E-04	0.0005	0.000E+00	0.0000	6.962E-03	0.0057	5.910E-05	0.0000	9.558E-05	0.0001	4.017E-04	0.0003
U-235	1.575E-01	0.1285	5.551E-04	0.0005	0.000E+00	0.0000	6.629E-03	0.0054	5.584E-05	0.0000	9.030E-05	0.0001	3.806E-04	0.0003
U-238	3.041E-02	0.0248	5.321E-04	0.0004	0.000E+00	0.0000	6.610E-03	0.0054	5.612E-05	0.0000	9.076E-05	0.0001	3.814E-04	0.0003
Total	4.207E-01	0.3431	9.970E-03	0.0081	0.000E+00	0.0000	7.710E-01	0.6288	1.304E-03	0.0011	4.594E-04	0.0004	2.265E-02	0.0185

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.036E-02	0.0329
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.229E-01	0.6712
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.061E-02	0.0250
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.058E-02	0.0249
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.013E-02	0.0735
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.199E-03	0.0067
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.652E-01	0.1348
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.808E-02	0.0311
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.226E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.022E-03	0.0074	1.969E-03	0.0016	0.000E+00	0.0000	2.380E-02	0.0195	2.687E-05	0.0000	3.828E-06	0.0000	5.081E-03	0.0042
Np-237	2.225E-01	0.1821	2.418E-03	0.0020	0.000E+00	0.0000	5.870E-01	0.4804	9.897E-04	0.0008	3.240E-05	0.0000	6.265E-03	0.0051
Pu-239	6.133E-05	0.0001	1.934E-03	0.0016	0.000E+00	0.0000	2.353E-02	0.0193	5.313E-05	0.0000	1.873E-06	0.0000	5.023E-03	0.0041
Pu-240	3.305E-05	0.0000	1.932E-03	0.0016	0.000E+00	0.0000	2.351E-02	0.0192	5.309E-05	0.0000	1.872E-06	0.0000	5.019E-03	0.0041
Tc-99	2.627E-05	0.0000	3.745E-08	0.0000	0.000E+00	0.0000	8.985E-02	0.0735	5.238E-06	0.0000	1.424E-04	0.0001	2.069E-06	0.0000
U-234	8.591E-05	0.0001	5.949E-04	0.0005	0.000E+00	0.0000	6.959E-03	0.0057	5.907E-05	0.0000	9.554E-05	0.0001	4.015E-04	0.0003
U-235	1.575E-01	0.1289	5.565E-04	0.0005	0.000E+00	0.0000	6.733E-03	0.0055	5.581E-05	0.0000	9.026E-05	0.0001	3.833E-04	0.0003
U-238	3.039E-02	0.0249	5.319E-04	0.0004	0.000E+00	0.0000	6.607E-03	0.0054	5.609E-05	0.0000	9.072E-05	0.0001	3.812E-04	0.0003
Total	4.195E-01	0.3434	9.936E-03	0.0081	0.000E+00	0.0000	7.680E-01	0.6286	1.299E-03	0.0011	4.589E-04	0.0004	2.256E-02	0.0185

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.991E-02	0.0327
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.191E-01	0.6705
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.060E-02	0.0250
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.055E-02	0.0250
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.003E-02	0.0737
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.196E-03	0.0067
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.653E-01	0.1353
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.806E-02	0.0312
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.222E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.738E-03	0.0072	1.906E-03	0.0016	0.000E+00	0.0000	2.306E-02	0.0191	2.603E-05	0.0000	3.707E-06	0.0000	4.920E-03	0.0041
Np-237	2.196E-01	0.1815	2.387E-03	0.0020	0.000E+00	0.0000	5.794E-01	0.4789	9.769E-04	0.0008	3.198E-05	0.0000	6.184E-03	0.0051
Pu-239	6.128E-05	0.0001	1.932E-03	0.0016	0.000E+00	0.0000	2.351E-02	0.0194	5.308E-05	0.0000	1.872E-06	0.0000	5.019E-03	0.0041
Pu-240	3.297E-05	0.0000	1.927E-03	0.0016	0.000E+00	0.0000	2.346E-02	0.0194	5.296E-05	0.0000	1.867E-06	0.0000	5.007E-03	0.0041
Tc-99	2.619E-05	0.0000	3.734E-08	0.0000	0.000E+00	0.0000	8.957E-02	0.0740	5.222E-06	0.0000	1.420E-04	0.0001	2.063E-06	0.0000
U-234	8.938E-05	0.0001	5.944E-04	0.0005	0.000E+00	0.0000	6.951E-03	0.0057	5.899E-05	0.0000	9.541E-05	0.0001	4.011E-04	0.0003
U-235	1.573E-01	0.1301	5.643E-04	0.0005	0.000E+00	0.0000	7.042E-03	0.0058	5.575E-05	0.0000	9.016E-05	0.0001	3.933E-04	0.0003
U-238	3.035E-02	0.0251	5.312E-04	0.0004	0.000E+00	0.0000	6.599E-03	0.0055	5.602E-05	0.0000	9.060E-05	0.0001	3.807E-04	0.0003
Total	4.162E-01	0.3441	9.843E-03	0.0081	0.000E+00	0.0000	7.595E-01	0.6279	1.285E-03	0.0011	4.576E-04	0.0004	2.231E-02	0.0184

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.865E-02	0.0320
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.085E-01	0.6684
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.058E-02	0.0253
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.048E-02	0.0252
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.974E-02	0.0742
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.190E-03	0.0068
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.655E-01	0.1368
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.801E-02	0.0314
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.210E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.814E-03	0.0067	1.704E-03	0.0015	0.000E+00	0.0000	2.062E-02	0.0176	2.328E-05	0.0000	3.314E-06	0.0000	4.397E-03	0.0038
Np-237	2.098E-01	0.1794	2.281E-03	0.0020	0.000E+00	0.0000	5.535E-01	0.4735	9.332E-04	0.0008	3.058E-05	0.0000	5.907E-03	0.0051
Pu-239	6.111E-05	0.0001	1.926E-03	0.0016	0.000E+00	0.0000	2.344E-02	0.0201	5.293E-05	0.0000	1.866E-06	0.0000	5.004E-03	0.0043
Pu-240	3.270E-05	0.0000	1.911E-03	0.0016	0.000E+00	0.0000	2.326E-02	0.0199	5.252E-05	0.0000	1.852E-06	0.0000	4.965E-03	0.0042
Tc-99	2.590E-05	0.0000	3.692E-08	0.0000	0.000E+00	0.0000	8.858E-02	0.0758	5.164E-06	0.0000	1.404E-04	0.0001	2.040E-06	0.0000
U-234	1.282E-04	0.0001	5.924E-04	0.0005	0.000E+00	0.0000	6.933E-03	0.0059	5.873E-05	0.0001	9.499E-05	0.0001	3.998E-04	0.0003
U-235	1.572E-01	0.1345	6.081E-04	0.0005	0.000E+00	0.0000	8.173E-03	0.0070	5.556E-05	0.0000	8.981E-05	0.0001	4.400E-04	0.0004
U-238	3.021E-02	0.0258	5.288E-04	0.0005	0.000E+00	0.0000	6.569E-03	0.0056	5.577E-05	0.0000	9.020E-05	0.0001	3.790E-04	0.0003
Total	4.052E-01	0.3466	9.551E-03	0.0082	0.000E+00	0.0000	7.310E-01	0.6254	1.237E-03	0.0011	4.530E-04	0.0004	2.149E-02	0.0184

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.456E-02	0.0296
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.724E-01	0.6607
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.049E-02	0.0261
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.022E-02	0.0259
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.876E-02	0.0759
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.207E-03	0.0070
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.665E-01	0.1425
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.783E-02	0.0324
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.169E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 100 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.678E-03	0.0053	1.236E-03	0.0012	0.000E+00	0.0000	1.498E-02	0.0141	1.694E-05	0.0000	2.405E-06	0.0000	3.190E-03	0.0030
Np-237	1.841E-01	0.1729	2.002E-03	0.0019	0.000E+00	0.0000	4.857E-01	0.4563	8.190E-04	0.0008	2.692E-05	0.0000	5.184E-03	0.0049
Pu-239	6.062E-05	0.0001	1.910E-03	0.0018	0.000E+00	0.0000	2.324E-02	0.0218	5.248E-05	0.0000	1.850E-06	0.0000	4.962E-03	0.0047
Pu-240	3.192E-05	0.0000	1.866E-03	0.0018	0.000E+00	0.0000	2.271E-02	0.0213	5.128E-05	0.0000	1.809E-06	0.0000	4.848E-03	0.0046
Tc-99	2.509E-05	0.0000	3.577E-08	0.0000	0.000E+00	0.0000	8.582E-02	0.0806	5.003E-06	0.0000	1.360E-04	0.0001	1.976E-06	0.0000
U-234	4.565E-04	0.0004	5.868E-04	0.0006	0.000E+00	0.0000	6.964E-03	0.0065	5.814E-05	0.0001	9.408E-05	0.0001	3.972E-04	0.0004
U-235	1.570E-01	0.1475	7.500E-04	0.0007	0.000E+00	0.0000	1.142E-02	0.0107	5.505E-05	0.0001	8.881E-05	0.0001	5.842E-04	0.0005
U-238	2.981E-02	0.0280	5.221E-04	0.0005	0.000E+00	0.0000	6.486E-03	0.0061	5.506E-05	0.0001	8.905E-05	0.0001	3.742E-04	0.0004
Total	3.771E-01	0.3543	8.873E-03	0.0083	0.000E+00	0.0000	6.573E-01	0.6176	1.113E-03	0.0010	4.410E-04	0.0004	1.954E-02	0.0184

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.511E-02	0.0236
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.778E-01	0.6368
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.023E-02	0.0284
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.951E-02	0.0277
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.599E-02	0.0808
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.557E-03	0.0080
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.699E-01	0.1596
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.733E-02	0.0351
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.064E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.865E-03	0.0017	4.018E-04	0.0004	0.000E+00	0.0000	4.920E-03	0.0044	5.590E-06	0.0000	7.844E-07	0.0000	1.037E-03	0.0009
Np-237	1.165E-01	0.1041	1.270E-03	0.0011	0.000E+00	0.0000	3.074E-01	0.2746	5.185E-04	0.0005	1.727E-05	0.0000	3.283E-03	0.0029
Pu-239	5.895E-05	0.0001	1.854E-03	0.0017	0.000E+00	0.0000	2.256E-02	0.0202	5.094E-05	0.0000	1.796E-06	0.0000	4.816E-03	0.0043
Pu-240	2.936E-05	0.0000	1.716E-03	0.0015	0.000E+00	0.0000	2.088E-02	0.0187	4.715E-05	0.0000	1.665E-06	0.0000	4.458E-03	0.0040
Tc-99	2.246E-05	0.0000	3.202E-08	0.0000	0.000E+00	0.0000	7.682E-02	0.0686	4.478E-06	0.0000	1.218E-04	0.0001	1.769E-06	0.0000
U-234	3.756E-03	0.0034	5.681E-04	0.0005	0.000E+00	0.0000	7.906E-03	0.0071	5.763E-05	0.0001	9.394E-05	0.0001	4.006E-04	0.0004
U-235	1.561E-01	0.1395	1.228E-03	0.0011	0.000E+00	0.0000	2.231E-02	0.0199	5.330E-05	0.0000	8.544E-05	0.0001	1.069E-03	0.0010
U-238	2.845E-02	0.0254	4.994E-04	0.0004	0.000E+00	0.0000	6.203E-03	0.0055	5.265E-05	0.0000	8.516E-05	0.0001	3.579E-04	0.0003
Total	3.069E-01	0.2741	7.537E-03	0.0067	0.000E+00	0.0000	4.690E-01	0.4189	7.902E-04	0.0007	4.078E-04	0.0004	1.542E-02	0.0138

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.079E-05	0.0000	1.553E-06	0.0000	0.000E+00	0.0000	1.888E-07	0.0000	1.400E-09	0.0000	1.176E-10	0.0000	8.272E-03	0.0074
Np-237	3.064E-01	0.2737	1.166E-02	0.0104	0.000E+00	0.0000	1.418E-03	0.0013	1.052E-05	0.0000	8.838E-07	0.0000	7.485E-01	0.6686
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.934E-02	0.0262
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.714E-02	0.0242
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.697E-02	0.0687
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.278E-02	0.0114
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.809E-01	0.1616
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.565E-02	0.0318
Total	3.064E-01	0.2737	1.167E-02	0.0104	0.000E+00	0.0000	1.418E-03	0.0013	1.052E-05	0.0000	8.840E-07	0.0000	1.120E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 100 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	4.055E-02	4.048E-02	4.035E-02	3.990E-02	3.864E-02	3.453E-02	2.505E-02	8.140E-03
Am-241	Np-237+D	1.000E+00	1.280E-07	3.940E-07	9.253E-07	2.766E-06	7.867E-06	2.397E-05	5.736E-05	1.322E-04
Am-241	U-233	1.000E+00	2.699E-15	1.629E-14	7.976E-14	6.800E-13	5.563E-12	5.692E-11	4.367E-10	3.630E-09
Am-241	Th-229+D	1.000E+00	2.109E-18	3.102E-17	3.586E-16	9.433E-15	2.277E-13	7.804E-12	1.853E-10	4.627E-09
Am-241	ΣDSR (j)		4.055E-02	4.048E-02	4.036E-02	3.991E-02	3.865E-02	3.456E-02	2.511E-02	8.272E-03
Np-237+D	Np-237+D	1.000E+00	8.245E-01	8.240E-01	8.229E-01	8.191E-01	8.085E-01	7.724E-01	6.777E-01	7.484E-01
Np-237+D	U-233	1.000E+00	2.289E-08	6.075E-08	1.356E-07	3.969E-07	1.136E-06	3.640E-06	1.013E-05	3.656E-05
Np-237+D	Th-229+D	1.000E+00	2.579E-11	1.780E-10	9.356E-10	8.332E-09	6.982E-08	7.435E-07	6.298E-06	5.814E-05
Np-237+D	ΣDSR (j)		8.245E-01	8.240E-01	8.229E-01	8.191E-01	8.085E-01	7.724E-01	6.778E-01	7.485E-01
Pu-239	Pu-239	1.000E+00	3.062E-02	3.062E-02	3.061E-02	3.060E-02	3.058E-02	3.049E-02	3.023E-02	2.934E-02
Pu-239	U-235+D	1.000E+00	8.120E-11	2.439E-10	5.692E-10	1.707E-09	4.954E-09	1.626E-08	4.810E-08	1.541E-07
Pu-239	Pa-231	1.000E+00	2.509E-15	1.814E-14	9.718E-14	8.752E-13	7.391E-12	8.005E-11	7.092E-10	7.610E-09
Pu-239	Ac-227+D	1.000E+00	1.829E-17	2.507E-16	2.750E-15	6.723E-14	1.409E-12	3.310E-11	4.235E-10	5.249E-09
Pu-239	ΣDSR (j)		3.062E-02	3.062E-02	3.061E-02	3.060E-02	3.058E-02	3.049E-02	3.023E-02	2.934E-02
Pu-240	Pu-240	4.950E-08	1.514E-09	1.514E-09	1.514E-09	1.512E-09	1.509E-09	1.496E-09	1.461E-09	1.343E-09
Pu-240	Pu-240	1.000E+00	3.059E-02	3.058E-02	3.058E-02	3.055E-02	3.048E-02	3.022E-02	2.951E-02	2.714E-02
Pu-240	U-236	1.000E+00	1.104E-10	3.396E-10	7.987E-10	2.404E-09	6.980E-09	2.286E-08	6.710E-08	2.093E-07
Pu-240	Th-232	1.000E+00	8.285E-21	5.369E-20	2.735E-19	2.397E-18	2.005E-17	2.161E-16	1.907E-15	2.024E-14
Pu-240	Ra-228+D	1.000E+00	1.301E-20	1.950E-19	2.179E-18	4.833E-17	7.738E-16	1.183E-14	1.166E-13	1.286E-12
Pu-240	Th-228+D	1.000E+00	1.028E-21	2.902E-20	6.137E-19	2.798E-17	6.676E-16	1.194E-14	1.225E-13	1.369E-12
Pu-240	ΣDSR (j)		3.059E-02	3.058E-02	3.058E-02	3.055E-02	3.048E-02	3.022E-02	2.951E-02	2.714E-02
Tc-99	Tc-99	1.000E+00	9.017E-02	9.016E-02	9.013E-02	9.003E-02	8.974E-02	8.876E-02	8.599E-02	7.697E-02
U-234	U-234	1.000E+00	8.200E-03	8.200E-03	8.198E-03	8.194E-03	8.183E-03	8.143E-03	8.030E-03	7.648E-03
U-234	Th-230	1.000E+00	3.030E-08	8.572E-08	1.960E-07	5.821E-07	1.684E-06	5.526E-06	1.639E-05	5.308E-05
U-234	Ra-226+D	1.000E+00	1.831E-09	1.297E-08	6.888E-08	6.171E-07	5.191E-06	5.570E-05	4.814E-04	4.753E-03
U-234	Pb-210+D	1.000E+00	3.037E-12	3.046E-11	2.596E-10	5.220E-09	1.012E-07	2.303E-06	2.875E-05	3.282E-04
U-234	ΣDSR (j)		8.200E-03	8.200E-03	8.199E-03	8.196E-03	8.190E-03	8.207E-03	8.557E-03	1.278E-02
U-235+D	U-235+D	1.000E+00	1.652E-01	1.652E-01	1.652E-01	1.651E-01	1.649E-01	1.641E-01	1.619E-01	1.545E-01
U-235+D	Pa-231	1.000E+00	7.808E-06	2.396E-05	5.630E-05	1.694E-04	4.923E-04	1.617E-03	4.790E-03	1.542E-02
U-235+D	Ac-227+D	1.000E+00	7.156E-08	4.613E-07	2.309E-06	1.887E-05	1.306E-04	8.322E-04	3.151E-03	1.097E-02
U-235+D	ΣDSR (j)		1.652E-01	1.652E-01	1.652E-01	1.653E-01	1.655E-01	1.665E-01	1.699E-01	1.809E-01
U-238	U-238	5.400E-05	3.959E-07	3.958E-07	3.958E-07	3.956E-07	3.951E-07	3.932E-07	3.880E-07	3.703E-07
U-238+D	U-238+D	9.999E-01	3.808E-02	3.808E-02	3.808E-02	3.806E-02	3.801E-02	3.783E-02	3.733E-02	3.562E-02
U-238+D	U-234	9.999E-01	1.162E-08	3.487E-08	8.134E-08	2.439E-07	7.075E-07	2.320E-06	6.844E-06	2.172E-05
U-238+D	Th-230	9.999E-01	3.013E-14	1.949E-13	9.936E-13	8.712E-12	7.291E-11	7.869E-10	6.962E-09	7.458E-08
U-238+D	Ra-226+D	9.999E-01	1.289E-15	1.961E-14	2.304E-13	6.130E-12	1.497E-10	5.303E-09	1.378E-07	4.605E-06
U-238+D	Pb-210+D	9.999E-01	1.954E-18	4.042E-17	7.231E-16	4.127E-14	2.323E-12	1.849E-10	7.536E-09	3.084E-07
U-238+D	ΣDSR (j)		3.808E-02	3.808E-02	3.808E-02	3.806E-02	3.801E-02	3.783E-02	3.733E-02	3.565E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 100 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		6.165E+02	6.175E+02	6.195E+02	6.265E+02	6.468E+02	7.234E+02	9.958E+02	3.022E+03
Np-237		3.032E+01	3.034E+01	3.038E+01	3.052E+01	3.092E+01	3.237E+01	3.689E+01	3.340E+01
Pu-239		8.165E+02	8.166E+02	8.166E+02	8.169E+02	8.176E+02	8.200E+02	8.270E+02	8.520E+02
Pu-240		8.173E+02	8.174E+02	8.176E+02	8.183E+02	8.203E+02	8.272E+02	8.472E+02	9.213E+02
Tc-99		2.772E+02	2.773E+02	2.774E+02	2.777E+02	2.786E+02	2.817E+02	2.907E+02	3.248E+02
U-234		3.049E+03	3.049E+03	3.049E+03	3.050E+03	3.052E+03	3.046E+03	2.922E+03	1.956E+03
U-235		1.513E+02	1.513E+02	1.513E+02	1.513E+02	1.511E+02	1.501E+02	1.472E+02	1.382E+02
U-238		6.565E+02	6.565E+02	6.566E+02	6.569E+02	6.578E+02	6.608E+02	6.696E+02	7.013E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	4.055E-02	6.165E+02	1.569E-02	1.593E+03
Np-237	1.000E+00	595 ± 1	9.907E-01	2.523E+01	9.907E-01	2.523E+01
Pu-239	1.000E+00	0.000E+00	3.062E-02	8.165E+02	2.985E-02	8.374E+02
Pu-240	1.000E+00	0.000E+00	3.059E-02	8.173E+02	2.848E-02	8.777E+02
Tc-99	1.000E+00	0.000E+00	9.017E-02	2.772E+02	8.207E-02	3.046E+02
U-234	1.000E+00	1.000E+03	1.278E-02	1.956E+03	9.818E-03	2.546E+03
U-235	1.000E+00	1.000E+03	1.809E-01	1.382E+02	1.746E-01	1.432E+02
U-238	1.000E+00	0.000E+00	3.808E-02	6.565E+02	3.661E-02	6.828E+02

Summary : Hematite - Uniform CSM - AF 100 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	4.055E-02	4.048E-02	4.035E-02	3.990E-02	3.864E-02	3.453E-02	2.505E-02	8.140E-03
Np-237	Am-241	1.000E+00	1.280E-07	3.940E-07	9.253E-07	2.766E-06	7.867E-06	2.397E-05	5.736E-05	1.322E-04
Np-237	Np-237	1.000E+00	8.245E-01	8.240E-01	8.229E-01	8.191E-01	8.085E-01	7.724E-01	6.777E-01	7.484E-01
Np-237	ΣDOSE (j)		8.245E-01	8.240E-01	8.229E-01	8.191E-01	8.085E-01	7.724E-01	6.778E-01	7.486E-01
U-233	Am-241	1.000E+00	2.699E-15	1.629E-14	7.976E-14	6.800E-13	5.563E-12	5.692E-11	4.367E-10	3.630E-09
U-233	Np-237	1.000E+00	2.289E-08	6.075E-08	1.356E-07	3.969E-07	1.136E-06	3.640E-06	1.013E-05	3.656E-05
U-233	ΣDOSE (j)		2.289E-08	6.075E-08	1.356E-07	3.969E-07	1.136E-06	3.640E-06	1.013E-05	3.656E-05
Th-229	Am-241	1.000E+00	2.109E-18	3.102E-17	3.586E-16	9.433E-15	2.277E-13	7.804E-12	1.853E-10	4.627E-09
Th-229	Np-237	1.000E+00	2.579E-11	1.780E-10	9.356E-10	8.332E-09	6.982E-08	7.435E-07	6.298E-06	5.814E-05
Th-229	ΣDOSE (j)		2.579E-11	1.780E-10	9.356E-10	8.332E-09	6.982E-08	7.435E-07	6.298E-06	5.814E-05
Pu-239	Pu-239	1.000E+00	3.062E-02	3.062E-02	3.061E-02	3.060E-02	3.058E-02	3.049E-02	3.023E-02	2.934E-02
U-235	Pu-239	1.000E+00	8.120E-11	2.439E-10	5.692E-10	1.707E-09	4.954E-09	1.626E-08	4.810E-08	1.541E-07
U-235	U-235	1.000E+00	1.652E-01	1.652E-01	1.652E-01	1.651E-01	1.649E-01	1.641E-01	1.619E-01	1.545E-01
U-235	ΣDOSE (j)		1.652E-01	1.652E-01	1.652E-01	1.651E-01	1.649E-01	1.641E-01	1.619E-01	1.545E-01
Pa-231	Pu-239	1.000E+00	2.509E-15	1.814E-14	9.718E-14	8.752E-13	7.391E-12	8.005E-11	7.092E-10	7.610E-09
Pa-231	U-235	1.000E+00	7.808E-06	2.396E-05	5.630E-05	1.694E-04	4.923E-04	1.617E-03	4.790E-03	1.542E-02
Pa-231	ΣDOSE (j)		7.808E-06	2.396E-05	5.630E-05	1.694E-04	4.923E-04	1.617E-03	4.790E-03	1.542E-02
Ac-227	Pu-239	1.000E+00	1.829E-17	2.507E-16	2.750E-15	6.723E-14	1.409E-12	3.310E-11	4.235E-10	5.249E-09
Ac-227	U-235	1.000E+00	7.156E-08	4.613E-07	2.309E-06	1.887E-05	1.306E-04	8.322E-04	3.151E-03	1.097E-02
Ac-227	ΣDOSE (j)		7.156E-08	4.613E-07	2.309E-06	1.887E-05	1.306E-04	8.322E-04	3.151E-03	1.097E-02
Pu-240	Pu-240	4.950E-08	1.514E-09	1.514E-09	1.514E-09	1.512E-09	1.509E-09	1.496E-09	1.461E-09	1.343E-09
Pu-240	Pu-240	1.000E+00	3.059E-02	3.058E-02	3.058E-02	3.055E-02	3.048E-02	3.022E-02	2.951E-02	2.714E-02
Pu-240	ΣDOSE (j)		3.059E-02	3.058E-02	3.058E-02	3.055E-02	3.048E-02	3.022E-02	2.951E-02	2.714E-02
U-236	Pu-240	1.000E+00	1.104E-10	3.396E-10	7.987E-10	2.404E-09	6.980E-09	2.286E-08	6.710E-08	2.093E-07
Th-232	Pu-240	1.000E+00	8.285E-21	5.369E-20	2.735E-19	2.397E-18	2.005E-17	2.161E-16	1.907E-15	2.024E-14
Ra-228	Pu-240	1.000E+00	1.301E-20	1.950E-19	2.179E-18	4.833E-17	7.738E-16	1.183E-14	1.166E-13	1.286E-12
Th-228	Pu-240	1.000E+00	1.028E-21	2.902E-20	6.137E-19	2.798E-17	6.676E-16	1.194E-14	1.225E-13	1.369E-12
Tc-99	Tc-99	1.000E+00	9.017E-02	9.016E-02	9.013E-02	9.003E-02	8.974E-02	8.876E-02	8.599E-02	7.697E-02
U-234	U-234	1.000E+00	8.200E-03	8.200E-03	8.198E-03	8.194E-03	8.183E-03	8.143E-03	8.030E-03	7.648E-03
U-234	U-238	9.999E-01	1.162E-08	3.487E-08	8.134E-08	2.439E-07	7.075E-07	2.320E-06	6.844E-06	2.172E-05
U-234	ΣDOSE (j)		8.200E-03	8.200E-03	8.199E-03	8.195E-03	8.184E-03	8.146E-03	8.037E-03	7.670E-03
Th-230	U-234	1.000E+00	3.030E-08	8.572E-08	1.960E-07	5.821E-07	1.684E-06	5.526E-06	1.639E-05	5.308E-05
Th-230	U-238	9.999E-01	3.013E-14	1.949E-13	9.936E-13	8.712E-12	7.291E-11	7.869E-10	6.962E-09	7.458E-08
Th-230	ΣDOSE (j)		3.030E-08	8.572E-08	1.961E-07	5.821E-07	1.684E-06	5.527E-06	1.639E-05	5.315E-05

Summary : Hematite - Uniform CSM - AF 100 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.831E-09	1.297E-08	6.888E-08	6.171E-07	5.191E-06	5.570E-05	4.814E-04	4.753E-03
Ra-226	U-238	9.999E-01	1.289E-15	1.961E-14	2.304E-13	6.130E-12	1.497E-10	5.303E-09	1.378E-07	4.605E-06
Ra-226	ΣDOSE(j)		1.831E-09	1.297E-08	6.888E-08	6.171E-07	5.191E-06	5.571E-05	4.816E-04	4.757E-03
Pb-210	U-234	1.000E+00	3.037E-12	3.046E-11	2.596E-10	5.220E-09	1.012E-07	2.303E-06	2.875E-05	3.282E-04
Pb-210	U-238	9.999E-01	1.954E-18	4.042E-17	7.231E-16	4.127E-14	2.323E-12	1.849E-10	7.536E-09	3.084E-07
Pb-210	ΣDOSE(j)		3.037E-12	3.046E-11	2.596E-10	5.220E-09	1.012E-07	2.304E-06	2.875E-05	3.286E-04
U-238	U-238	5.400E-05	3.959E-07	3.958E-07	3.958E-07	3.956E-07	3.951E-07	3.932E-07	3.880E-07	3.703E-07
U-238	U-238	9.999E-01	3.808E-02	3.808E-02	3.808E-02	3.806E-02	3.801E-02	3.783E-02	3.733E-02	3.562E-02
U-238	ΣDOSE(j)		3.808E-02	3.808E-02	3.808E-02	3.806E-02	3.801E-02	3.783E-02	3.733E-02	3.562E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM - AF 100 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 100 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.22 seconds

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Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1000.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr							
Basic Radiation Dose Limit = 2.500E+01 mrem/yr							
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)							
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	8.449E+00	8.445E+00	8.436E+00	8.403E+00	8.312E+00	8.006E+00	7.216E+00
M(t):	3.380E-01	3.378E-01	3.374E-01	3.361E-01	3.325E-01	3.202E-01	2.886E-01
Maximum TDOSE(t): 1.074E+01 mrem/yr at t = 595 ± 1 years							

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)														
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Am-241	3.921E-03	0.0004	9.904E-04	0.0001	0.000E+00	0.0000	9.362E-02	0.0087	1.060E-04	0.0000	1.499E-05	0.0000	1.987E-02	0.0019
Np-237	1.696E-01	0.0158	2.126E-03	0.0002	0.000E+00	0.0000	4.005E+00	0.3731	6.754E-03	0.0006	2.231E-04	0.0000	4.276E-02	0.0040
Pu-239	6.643E-05	0.0000	2.427E-03	0.0002	0.000E+00	0.0000	2.295E-01	0.0214	5.182E-04	0.0000	1.827E-05	0.0000	4.900E-02	0.0046
Pu-240	3.313E-05	0.0000	2.318E-03	0.0002	0.000E+00	0.0000	2.192E-01	0.0204	4.950E-04	0.0000	1.747E-05	0.0000	4.679E-02	0.0044
Tc-99	2.648E-05	0.0000	4.393E-08	0.0000	0.000E+00	0.0000	8.190E-01	0.0763	4.775E-05	0.0000	1.298E-03	0.0001	1.886E-05	0.0000
U-234	1.673E-03	0.0002	7.447E-04	0.0001	0.000E+00	0.0000	7.217E-02	0.0067	5.765E-04	0.0001	9.350E-04	0.0001	3.965E-03	0.0004
U-235	1.737E-01	0.0162	1.229E-03	0.0001	0.000E+00	0.0000	1.610E-01	0.0150	5.430E-04	0.0001	8.738E-04	0.0001	7.927E-03	0.0007
U-238	3.300E-02	0.0031	6.593E-04	0.0001	0.000E+00	0.0000	6.365E-02	0.0059	5.403E-04	0.0001	8.739E-04	0.0001	3.672E-03	0.0003
Total	3.820E-01	0.0356	1.049E-02	0.0010	0.000E+00	0.0000	5.663E+00	0.5275	9.581E-03	0.0009	4.255E-03	0.0004	1.740E-01	0.0162

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.467E-04	0.0000	5.583E-06	0.0000	0.000E+00	0.0000	6.788E-06	0.0000	5.031E-08	0.0000	4.224E-09	0.0000	1.187E-01	0.0111
Np-237	4.141E+00	0.3857	1.576E-01	0.0147	0.000E+00	0.0000	1.916E-01	0.0179	1.421E-03	0.0001	1.193E-04	0.0000	8.718E+00	0.8121
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.816E-01	0.0262
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.689E-01	0.0250
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.204E-01	0.0764
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.006E-02	0.0075
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.454E-01	0.0322
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.024E-01	0.0095
Total	4.141E+00	0.3857	1.576E-01	0.0147	0.000E+00	0.0000	1.917E-01	0.0179	1.421E-03	0.0001	1.193E-04	0.0000	1.074E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.013E-02	0.0012	2.574E-03	0.0003	0.000E+00	0.0000	2.419E-01	0.0286	2.731E-04	0.0000	3.890E-05	0.0000	5.163E-02	0.0061
Np-237	2.501E-01	0.0296	3.132E-03	0.0004	0.000E+00	0.0000	5.908E+00	0.6993	9.962E-03	0.0012	3.260E-04	0.0000	6.306E-02	0.0075
Pu-239	6.803E-05	0.0000	2.489E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0279	5.315E-04	0.0001	1.874E-05	0.0000	5.025E-02	0.0059
Pu-240	3.557E-05	0.0000	2.489E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0279	5.315E-04	0.0001	1.874E-05	0.0000	5.025E-02	0.0059
Tc-99	2.909E-05	0.0000	4.827E-08	0.0000	0.000E+00	0.0000	9.000E-01	0.1065	5.246E-05	0.0000	1.427E-03	0.0002	2.072E-05	0.0000
U-234	9.394E-05	0.0000	7.659E-04	0.0001	0.000E+00	0.0000	6.963E-02	0.0082	5.911E-04	0.0001	9.560E-04	0.0001	4.017E-03	0.0005
U-235	1.747E-01	0.0207	7.137E-04	0.0001	0.000E+00	0.0000	6.585E-02	0.0078	5.585E-04	0.0001	9.032E-04	0.0001	3.797E-03	0.0004
U-238	3.434E-02	0.0041	6.848E-04	0.0001	0.000E+00	0.0000	6.611E-02	0.0078	5.613E-04	0.0001	9.077E-04	0.0001	3.814E-03	0.0005
Total	4.695E-01	0.0556	1.285E-02	0.0015	0.000E+00	0.0000	7.722E+00	0.9140	1.306E-02	0.0015	4.596E-03	0.0005	2.268E-01	0.0268

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.065E-01	0.0363
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.235E+00	0.7379
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.888E-01	0.0342
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.887E-01	0.0342
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.015E-01	0.1067
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.606E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.465E-01	0.0292
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.064E-01	0.0126
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.449E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.011E-02	0.0012	2.570E-03	0.0003	0.000E+00	0.0000	2.415E-01	0.0286	2.726E-04	0.0000	3.884E-05	0.0000	5.155E-02	0.0061
Np-237	2.500E-01	0.0296	3.130E-03	0.0004	0.000E+00	0.0000	5.904E+00	0.6992	9.956E-03	0.0012	3.258E-04	0.0000	6.302E-02	0.0075
Pu-239	6.802E-05	0.0000	2.489E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0279	5.315E-04	0.0001	1.874E-05	0.0000	5.025E-02	0.0060
Pu-240	3.557E-05	0.0000	2.489E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0279	5.314E-04	0.0001	1.874E-05	0.0000	5.024E-02	0.0059
Tc-99	2.909E-05	0.0000	4.826E-08	0.0000	0.000E+00	0.0000	8.998E-01	0.1066	5.246E-05	0.0000	1.426E-03	0.0002	2.072E-05	0.0000
U-234	9.395E-05	0.0000	7.658E-04	0.0001	0.000E+00	0.0000	6.963E-02	0.0082	5.911E-04	0.0001	9.560E-04	0.0001	4.017E-03	0.0005
U-235	1.747E-01	0.0207	7.138E-04	0.0001	0.000E+00	0.0000	6.600E-02	0.0078	5.584E-04	0.0001	9.031E-04	0.0001	3.800E-03	0.0004
U-238	3.434E-02	0.0041	6.848E-04	0.0001	0.000E+00	0.0000	6.611E-02	0.0078	5.612E-04	0.0001	9.077E-04	0.0001	3.814E-03	0.0005
Total	4.693E-01	0.0556	1.284E-02	0.0015	0.000E+00	0.0000	7.718E+00	0.9140	1.305E-02	0.0015	4.595E-03	0.0005	2.267E-01	0.0268

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.060E-01	0.0362
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.231E+00	0.7378
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.888E-01	0.0342
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.887E-01	0.0342
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.013E-01	0.1067
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.605E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.467E-01	0.0292
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.064E-01	0.0126
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.445E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.008E-02	0.0012	2.562E-03	0.0003	0.000E+00	0.0000	2.407E-01	0.0285	2.718E-04	0.0000	3.871E-05	0.0000	5.138E-02	0.0061
Np-237	2.496E-01	0.0296	3.126E-03	0.0004	0.000E+00	0.0000	5.897E+00	0.6990	9.943E-03	0.0012	3.254E-04	0.0000	6.294E-02	0.0075
Pu-239	6.802E-05	0.0000	2.489E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0279	5.315E-04	0.0001	1.874E-05	0.0000	5.025E-02	0.0060
Pu-240	3.556E-05	0.0000	2.488E-03	0.0003	0.000E+00	0.0000	2.353E-01	0.0279	5.313E-04	0.0001	1.873E-05	0.0000	5.023E-02	0.0060
Tc-99	2.908E-05	0.0000	4.825E-08	0.0000	0.000E+00	0.0000	8.995E-01	0.1066	5.244E-05	0.0000	1.426E-03	0.0002	2.071E-05	0.0000
U-234	9.399E-05	0.0000	7.657E-04	0.0001	0.000E+00	0.0000	6.962E-02	0.0083	5.910E-04	0.0001	9.558E-04	0.0001	4.017E-03	0.0005
U-235	1.747E-01	0.0207	7.142E-04	0.0001	0.000E+00	0.0000	6.629E-02	0.0079	5.584E-04	0.0001	9.030E-04	0.0001	3.806E-03	0.0005
U-238	3.433E-02	0.0041	6.847E-04	0.0001	0.000E+00	0.0000	6.610E-02	0.0078	5.612E-04	0.0001	9.076E-04	0.0001	3.814E-03	0.0005
Total	4.690E-01	0.0556	1.283E-02	0.0015	0.000E+00	0.0000	7.710E+00	0.9139	1.304E-02	0.0015	4.594E-03	0.0005	2.265E-01	0.0268

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.051E-01	0.0362
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.223E+00	0.7377
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.887E-01	0.0342
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.886E-01	0.0342
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.011E-01	0.1068
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.604E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.470E-01	0.0293
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.064E-01	0.0126
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.436E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.969E-03	0.0012	2.533E-03	0.0003	0.000E+00	0.0000	2.380E-01	0.0283	2.687E-04	0.0000	3.828E-05	0.0000	5.081E-02	0.0060
Np-237	2.485E-01	0.0296	3.112E-03	0.0004	0.000E+00	0.0000	5.870E+00	0.6985	9.897E-03	0.0012	3.240E-04	0.0000	6.265E-02	0.0075
Pu-239	6.800E-05	0.0000	2.488E-03	0.0003	0.000E+00	0.0000	2.353E-01	0.0280	5.313E-04	0.0001	1.873E-05	0.0000	5.023E-02	0.0060
Pu-240	3.553E-05	0.0000	2.486E-03	0.0003	0.000E+00	0.0000	2.351E-01	0.0280	5.309E-04	0.0001	1.872E-05	0.0000	5.019E-02	0.0060
Tc-99	2.905E-05	0.0000	4.819E-08	0.0000	0.000E+00	0.0000	8.985E-01	0.1069	5.238E-05	0.0000	1.424E-03	0.0002	2.069E-05	0.0000
U-234	9.444E-05	0.0000	7.655E-04	0.0001	0.000E+00	0.0000	6.959E-02	0.0083	5.907E-04	0.0001	9.554E-04	0.0001	4.015E-03	0.0005
U-235	1.746E-01	0.0208	7.161E-04	0.0001	0.000E+00	0.0000	6.733E-02	0.0080	5.581E-04	0.0001	9.026E-04	0.0001	3.833E-03	0.0005
U-238	3.432E-02	0.0041	6.844E-04	0.0001	0.000E+00	0.0000	6.607E-02	0.0079	5.609E-04	0.0001	9.072E-04	0.0001	3.812E-03	0.0005
Total	4.676E-01	0.0556	1.278E-02	0.0015	0.000E+00	0.0000	7.680E+00	0.9139	1.299E-02	0.0015	4.589E-03	0.0005	2.256E-01	0.0268

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.017E-01	0.0359
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.194E+00	0.7371
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.887E-01	0.0344
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.884E-01	0.0343
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.001E-01	0.1071
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.601E-02	0.0090
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.480E-01	0.0295
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.064E-01	0.0127
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.403E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.655E-03	0.0012	2.453E-03	0.0003	0.000E+00	0.0000	2.306E-01	0.0277	2.603E-04	0.0000	3.707E-05	0.0000	4.920E-02	0.0059
Np-237	2.453E-01	0.0295	3.071E-03	0.0004	0.000E+00	0.0000	5.794E+00	0.6970	9.769E-03	0.0012	3.198E-04	0.0000	6.184E-02	0.0074
Pu-239	6.795E-05	0.0000	2.486E-03	0.0003	0.000E+00	0.0000	2.351E-01	0.0283	5.308E-04	0.0001	1.872E-05	0.0000	5.019E-02	0.0060
Pu-240	3.544E-05	0.0000	2.480E-03	0.0003	0.000E+00	0.0000	2.346E-01	0.0282	5.296E-04	0.0001	1.867E-05	0.0000	5.007E-02	0.0060
Tc-99	2.896E-05	0.0000	4.804E-08	0.0000	0.000E+00	0.0000	8.957E-01	0.1078	5.222E-05	0.0000	1.420E-03	0.0002	2.063E-05	0.0000
U-234	9.838E-05	0.0000	7.648E-04	0.0001	0.000E+00	0.0000	6.951E-02	0.0084	5.899E-04	0.0001	9.541E-04	0.0001	4.011E-03	0.0005
U-235	1.745E-01	0.0210	7.260E-04	0.0001	0.000E+00	0.0000	7.042E-02	0.0085	5.575E-04	0.0001	9.016E-04	0.0001	3.933E-03	0.0005
U-238	3.427E-02	0.0041	6.835E-04	0.0001	0.000E+00	0.0000	6.599E-02	0.0079	5.602E-04	0.0001	9.060E-04	0.0001	3.807E-03	0.0005
Total	4.639E-01	0.0558	1.266E-02	0.0015	0.000E+00	0.0000	7.595E+00	0.9137	1.285E-02	0.0015	4.576E-03	0.0006	2.231E-01	0.0268

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.922E-01	0.0351
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.114E+00	0.7355
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.884E-01	0.0347
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.877E-01	0.0346
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.972E-01	0.1079
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.593E-02	0.0091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.510E-01	0.0302
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.062E-01	0.0128
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.312E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.634E-03	0.0011	2.192E-03	0.0003	0.000E+00	0.0000	2.062E-01	0.0258	2.328E-04	0.0000	3.314E-05	0.0000	4.397E-02	0.0055
Np-237	2.343E-01	0.0293	2.934E-03	0.0004	0.000E+00	0.0000	5.535E+00	0.6913	9.332E-03	0.0012	3.058E-04	0.0000	5.907E-02	0.0074
Pu-239	6.776E-05	0.0000	2.478E-03	0.0003	0.000E+00	0.0000	2.344E-01	0.0293	5.293E-04	0.0001	1.866E-05	0.0000	5.004E-02	0.0063
Pu-240	3.515E-05	0.0000	2.459E-03	0.0003	0.000E+00	0.0000	2.326E-01	0.0291	5.252E-04	0.0001	1.852E-05	0.0000	4.965E-02	0.0062
Tc-99	2.864E-05	0.0000	4.751E-08	0.0000	0.000E+00	0.0000	8.858E-01	0.1106	5.164E-05	0.0000	1.404E-03	0.0002	2.040E-05	0.0000
U-234	1.425E-04	0.0000	7.622E-04	0.0001	0.000E+00	0.0000	6.933E-02	0.0087	5.873E-04	0.0001	9.499E-04	0.0001	3.998E-03	0.0005
U-235	1.743E-01	0.0218	7.824E-04	0.0001	0.000E+00	0.0000	8.173E-02	0.0102	5.556E-04	0.0001	8.981E-04	0.0001	4.400E-03	0.0005
U-238	3.411E-02	0.0043	6.805E-04	0.0001	0.000E+00	0.0000	6.569E-02	0.0082	5.577E-04	0.0001	9.020E-04	0.0001	3.790E-03	0.0005
Total	4.516E-01	0.0564	1.229E-02	0.0015	0.000E+00	0.0000	7.310E+00	0.9131	1.237E-02	0.0015	4.530E-03	0.0006	2.149E-01	0.0268

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.612E-01	0.0326
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.841E+00	0.7295
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.876E-01	0.0359
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.853E-01	0.0356
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.873E-01	0.1108
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.577E-02	0.0095
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.627E-01	0.0328
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.057E-01	0.0132
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.006E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.274E-03	0.0009	1.590E-03	0.0002	0.000E+00	0.0000	1.498E-01	0.0208	1.694E-04	0.0000	2.405E-05	0.0000	3.190E-02	0.0044
Np-237	2.056E-01	0.0285	2.576E-03	0.0004	0.000E+00	0.0000	4.857E+00	0.6731	8.190E-03	0.0011	2.692E-04	0.0000	5.184E-02	0.0072
Pu-239	6.722E-05	0.0000	2.457E-03	0.0003	0.000E+00	0.0000	2.324E-01	0.0322	5.248E-04	0.0001	1.850E-05	0.0000	4.962E-02	0.0069
Pu-240	3.432E-05	0.0000	2.401E-03	0.0003	0.000E+00	0.0000	2.271E-01	0.0315	5.128E-04	0.0001	1.809E-05	0.0000	4.848E-02	0.0067
Tc-99	2.774E-05	0.0000	4.603E-08	0.0000	0.000E+00	0.0000	8.582E-01	0.1189	5.003E-05	0.0000	1.360E-03	0.0002	1.976E-05	0.0000
U-234	5.156E-04	0.0001	7.551E-04	0.0001	0.000E+00	0.0000	6.964E-02	0.0097	5.814E-04	0.0001	9.408E-04	0.0001	3.972E-03	0.0006
U-235	1.741E-01	0.0241	9.651E-04	0.0001	0.000E+00	0.0000	1.142E-01	0.0158	5.505E-04	0.0001	8.881E-04	0.0001	5.842E-03	0.0008
U-238	3.366E-02	0.0047	6.719E-04	0.0001	0.000E+00	0.0000	6.486E-02	0.0090	5.506E-04	0.0001	8.905E-04	0.0001	3.742E-03	0.0005
Total	4.203E-01	0.0582	1.142E-02	0.0016	0.000E+00	0.0000	6.573E+00	0.9109	1.113E-02	0.0015	4.410E-03	0.0006	1.954E-01	0.0271

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.898E-01	0.0263
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.125E+00	0.7103
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.851E-01	0.0395
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.785E-01	0.0386
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.597E-01	0.1191
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.641E-02	0.0106
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.966E-01	0.0411
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.044E-01	0.0145
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.216E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.061E-03	0.0002	5.171E-04	0.0001	0.000E+00	0.0000	4.920E-02	0.0058	5.590E-05	0.0000	7.844E-06	0.0000	1.037E-02	0.0012
Np-237	1.302E-01	0.0153	1.634E-03	0.0002	0.000E+00	0.0000	3.074E+00	0.3603	5.185E-03	0.0006	1.727E-04	0.0000	3.283E-02	0.0038
Pu-239	6.536E-05	0.0000	2.385E-03	0.0003	0.000E+00	0.0000	2.256E-01	0.0264	5.094E-04	0.0001	1.796E-05	0.0000	4.816E-02	0.0056
Pu-240	3.156E-05	0.0000	2.208E-03	0.0003	0.000E+00	0.0000	2.088E-01	0.0245	4.715E-04	0.0001	1.665E-05	0.0000	4.458E-02	0.0052
Tc-99	2.483E-05	0.0000	4.120E-08	0.0000	0.000E+00	0.0000	7.682E-01	0.0900	4.478E-05	0.0000	1.218E-03	0.0001	1.769E-05	0.0000
U-234	4.265E-03	0.0005	7.309E-04	0.0001	0.000E+00	0.0000	7.906E-02	0.0093	5.763E-04	0.0001	9.394E-04	0.0001	4.006E-03	0.0005
U-235	1.732E-01	0.0203	1.580E-03	0.0002	0.000E+00	0.0000	2.231E-01	0.0261	5.330E-04	0.0001	8.544E-04	0.0001	1.069E-02	0.0013
U-238	3.212E-02	0.0038	6.426E-04	0.0001	0.000E+00	0.0000	6.203E-02	0.0073	5.265E-04	0.0001	8.516E-04	0.0001	3.579E-03	0.0004
Total	3.420E-01	0.0401	9.698E-03	0.0011	0.000E+00	0.0000	4.690E+00	0.5497	7.902E-03	0.0009	4.078E-03	0.0005	1.542E-01	0.0181

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.079E-04	0.0000	1.553E-05	0.0000	0.000E+00	0.0000	1.888E-05	0.0000	1.400E-07	0.0000	1.176E-08	0.0000	6.265E-02	0.0073
Np-237	3.064E+00	0.3591	1.166E-01	0.0137	0.000E+00	0.0000	1.418E-01	0.0166	1.052E-03	0.0001	8.838E-05	0.0000	6.568E+00	0.7698
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.768E-01	0.0324
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.561E-01	0.0300
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.695E-01	0.0902
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.957E-02	0.0105
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.100E-01	0.0481
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.976E-02	0.0117
Total	3.064E+00	0.3592	1.167E-01	0.0137	0.000E+00	0.0000	1.418E-01	0.0166	1.052E-03	0.0001	8.840E-05	0.0000	8.532E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.065E-01	3.060E-01	3.051E-01	3.016E-01	2.921E-01	2.611E-01	1.893E-01	6.153E-02
Am-241	Np-237+D	1.000E+00	9.545E-07	2.965E-06	6.983E-06	2.090E-05	5.947E-05	1.813E-04	4.338E-04	1.120E-03
Am-241	U-233	1.000E+00	2.513E-14	1.498E-13	7.289E-13	6.189E-12	5.056E-11	5.170E-10	3.966E-09	3.389E-08
Am-241	Th-229+D	1.000E+00	4.577E-18	6.264E-17	7.018E-16	1.816E-14	4.360E-13	1.492E-11	3.540E-10	8.843E-09
Am-241	ΣDSR (j)		3.065E-01	3.060E-01	3.051E-01	3.017E-01	2.922E-01	2.612E-01	1.898E-01	6.265E-02
Np-237+D	Np-237+D	1.000E+00	6.235E+00	6.231E+00	6.223E+00	6.194E+00	6.114E+00	5.840E+00	5.125E+00	6.567E+00
Np-237+D	U-233	1.000E+00	2.116E-07	5.558E-07	1.236E-06	3.608E-06	1.032E-05	3.306E-05	9.196E-05	3.455E-04
Np-237+D	Th-229+D	1.000E+00	5.400E-11	3.528E-10	1.816E-09	1.600E-08	1.336E-07	1.421E-06	1.203E-05	1.112E-04
Np-237+D	ΣDSR (j)		6.235E+00	6.231E+00	6.223E+00	6.194E+00	6.114E+00	5.841E+00	5.125E+00	6.568E+00
Pu-239	Pu-239	1.000E+00	2.888E-01	2.888E-01	2.887E-01	2.887E-01	2.884E-01	2.876E-01	2.851E-01	2.768E-01
Pu-239	U-235+D	1.000E+00	1.199E-10	3.625E-10	8.478E-10	2.546E-09	7.390E-09	2.426E-08	7.175E-08	2.299E-07
Pu-239	Pa-231	1.000E+00	2.372E-14	1.718E-13	9.211E-13	8.300E-12	7.009E-11	7.592E-10	6.726E-09	7.218E-08
Pu-239	Ac-227+D	1.000E+00	7.556E-17	9.075E-16	9.120E-15	2.105E-13	4.320E-12	1.007E-10	1.286E-09	1.593E-08
Pu-239	ΣDSR (j)		2.888E-01	2.888E-01	2.887E-01	2.887E-01	2.884E-01	2.876E-01	2.851E-01	2.768E-01
Pu-240	Pu-240	4.950E-08	1.429E-08	1.429E-08	1.429E-08	1.428E-08	1.424E-08	1.412E-08	1.379E-08	1.268E-08
Pu-240	Pu-240	1.000E+00	2.887E-01	2.887E-01	2.886E-01	2.884E-01	2.877E-01	2.853E-01	2.785E-01	2.561E-01
Pu-240	U-236	1.000E+00	1.025E-09	3.160E-09	7.436E-09	2.239E-08	6.500E-08	2.129E-07	6.249E-07	1.949E-06
Pu-240	Th-232	1.000E+00	6.693E-20	4.254E-19	2.146E-18	1.870E-17	1.561E-16	1.682E-15	1.484E-14	1.574E-13
Pu-240	Ra-228+D	1.000E+00	5.451E-20	8.436E-19	9.574E-18	2.142E-16	3.439E-15	5.263E-14	5.185E-13	5.722E-12
Pu-240	Th-228+D	1.000E+00	1.454E-21	3.793E-20	7.636E-19	3.376E-17	7.974E-16	1.422E-14	1.457E-13	1.629E-12
Pu-240	ΣDSR (j)		2.887E-01	2.887E-01	2.886E-01	2.884E-01	2.877E-01	2.853E-01	2.785E-01	2.561E-01
Tc-99	Tc-99	1.000E+00	9.015E-01	9.013E-01	9.011E-01	9.001E-01	8.972E-01	8.873E-01	8.597E-01	7.695E-01
U-234	U-234	1.000E+00	7.606E-02	7.605E-02	7.604E-02	7.600E-02	7.590E-02	7.553E-02	7.448E-02	7.093E-02
U-234	Th-230	1.000E+00	2.353E-07	6.539E-07	1.486E-06	4.398E-06	1.271E-05	4.169E-05	1.236E-04	4.004E-04
U-234	Ra-226+D	1.000E+00	5.498E-09	4.003E-08	2.151E-07	1.939E-06	1.634E-05	1.755E-04	1.517E-03	1.498E-02
U-234	Pb-210+D	1.000E+00	3.031E-11	3.037E-10	2.585E-09	5.194E-08	1.006E-06	2.290E-05	2.858E-04	3.264E-03
U-234	ΣDSR (j)		7.606E-02	7.605E-02	7.604E-02	7.601E-02	7.593E-02	7.577E-02	7.641E-02	8.957E-02
U-235+D	U-235+D	1.000E+00	2.465E-01	2.464E-01	2.464E-01	2.463E-01	2.460E-01	2.448E-01	2.416E-01	2.305E-01
U-235+D	Pa-231	1.000E+00	7.391E-05	2.271E-04	5.338E-04	1.607E-03	4.669E-03	1.534E-02	4.543E-02	1.462E-01
U-235+D	Ac-227+D	1.000E+00	2.803E-07	1.594E-06	7.447E-06	5.843E-05	3.988E-04	2.528E-03	9.561E-03	3.327E-02
U-235+D	ΣDSR (j)		2.465E-01	2.467E-01	2.470E-01	2.480E-01	2.510E-01	2.627E-01	2.966E-01	4.100E-01
U-238	U-238	5.400E-05	3.697E-06	3.697E-06	3.696E-06	3.695E-06	3.690E-06	3.672E-06	3.624E-06	3.458E-06
U-238+D	U-238+D	9.999E-01	1.064E-01	1.064E-01	1.064E-01	1.063E-01	1.062E-01	1.057E-01	1.043E-01	9.953E-02
U-238+D	U-234	9.999E-01	1.078E-07	3.234E-07	7.544E-07	2.262E-06	6.562E-06	2.152E-05	6.347E-05	2.015E-04
U-238+D	Th-230	9.999E-01	2.373E-13	1.501E-12	7.567E-12	6.594E-11	5.506E-10	5.938E-09	5.252E-08	5.626E-07
U-238+D	Ra-226+D	9.999E-01	3.813E-15	5.999E-14	7.164E-13	1.923E-11	4.710E-10	1.670E-08	4.340E-07	1.451E-05
U-238+D	Pb-210+D	9.999E-01	1.950E-17	4.031E-16	7.204E-15	4.107E-13	2.310E-11	1.839E-09	7.493E-08	3.066E-06
U-238+D	ΣDSR (j)		1.064E-01	1.064E-01	1.064E-01	1.064E-01	1.062E-01	1.057E-01	1.044E-01	9.975E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		8.156E+01	8.169E+01	8.195E+01	8.287E+01	8.557E+01	9.570E+01	1.317E+02	3.990E+02
Np-237		4.010E+00	4.012E+00	4.018E+00	4.036E+00	4.089E+00	4.280E+00	4.878E+00	3.807E+00
Pu-239		8.657E+01	8.658E+01	8.658E+01	8.661E+01	8.668E+01	8.694E+01	8.768E+01	9.033E+01
Pu-240		8.658E+01	8.660E+01	8.662E+01	8.669E+01	8.690E+01	8.763E+01	8.975E+01	9.760E+01
Tc-99		2.773E+01	2.774E+01	2.775E+01	2.778E+01	2.786E+01	2.817E+01	2.908E+01	3.249E+01
U-234		3.287E+02	3.287E+02	3.288E+02	3.289E+02	3.293E+02	3.300E+02	3.272E+02	2.791E+02
U-235		1.014E+02	1.013E+02	1.012E+02	1.008E+02	9.959E+01	9.517E+01	8.430E+01	6.098E+01
U-238		2.349E+02	2.349E+02	2.350E+02	2.351E+02	2.354E+02	2.364E+02	2.395E+02	2.506E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	3.065E-01	8.156E+01	1.187E-01	2.106E+02
Np-237	1.000E+00	595 ± 1	8.718E+00	2.868E+00	8.718E+00	2.868E+00
Pu-239	1.000E+00	0.000E+00	2.888E-01	8.657E+01	2.816E-01	8.879E+01
Pu-240	1.000E+00	0.000E+00	2.887E-01	8.658E+01	2.689E-01	9.298E+01
Tc-99	1.000E+00	0.000E+00	9.015E-01	2.773E+01	8.204E-01	3.047E+01
U-234	1.000E+00	1.000E+03	8.957E-02	2.791E+02	8.006E-02	3.123E+02
U-235	1.000E+00	1.000E+03	4.100E-01	6.098E+01	3.454E-01	7.239E+01
U-238	1.000E+00	0.000E+00	1.064E-01	2.349E+02	1.024E-01	2.441E+02

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.065E-01	3.060E-01	3.051E-01	3.016E-01	2.921E-01	2.611E-01	1.893E-01	6.153E-02
Np-237	Am-241	1.000E+00	9.545E-07	2.965E-06	6.983E-06	2.090E-05	5.947E-05	1.813E-04	4.338E-04	1.120E-03
Np-237	Np-237	1.000E+00	6.235E+00	6.231E+00	6.223E+00	6.194E+00	6.114E+00	5.840E+00	5.125E+00	6.567E+00
Np-237	ΣDOSE (j)		6.235E+00	6.231E+00	6.223E+00	6.194E+00	6.114E+00	5.841E+00	5.125E+00	6.568E+00
U-233	Am-241	1.000E+00	2.513E-14	1.498E-13	7.289E-13	6.189E-12	5.056E-11	5.170E-10	3.966E-09	3.389E-08
U-233	Np-237	1.000E+00	2.116E-07	5.558E-07	1.236E-06	3.608E-06	1.032E-05	3.306E-05	9.196E-05	3.455E-04
U-233	ΣDOSE (j)		2.116E-07	5.558E-07	1.236E-06	3.608E-06	1.032E-05	3.306E-05	9.197E-05	3.456E-04
Th-229	Am-241	1.000E+00	4.577E-18	6.264E-17	7.018E-16	1.816E-14	4.360E-13	1.492E-11	3.540E-10	8.843E-09
Th-229	Np-237	1.000E+00	5.400E-11	3.528E-10	1.816E-09	1.600E-08	1.336E-07	1.421E-06	1.203E-05	1.112E-04
Th-229	ΣDOSE (j)		5.400E-11	3.528E-10	1.816E-09	1.600E-08	1.336E-07	1.421E-06	1.203E-05	1.112E-04
Pu-239	Pu-239	1.000E+00	2.888E-01	2.888E-01	2.887E-01	2.887E-01	2.884E-01	2.876E-01	2.851E-01	2.768E-01
U-235	Pu-239	1.000E+00	1.199E-10	3.625E-10	8.478E-10	2.546E-09	7.390E-09	2.426E-08	7.175E-08	2.299E-07
U-235	U-235	1.000E+00	2.465E-01	2.464E-01	2.464E-01	2.463E-01	2.460E-01	2.448E-01	2.416E-01	2.305E-01
U-235	ΣDOSE (j)		2.465E-01	2.464E-01	2.464E-01	2.463E-01	2.460E-01	2.448E-01	2.416E-01	2.305E-01
Pa-231	Pu-239	1.000E+00	2.372E-14	1.718E-13	9.211E-13	8.300E-12	7.009E-11	7.592E-10	6.726E-09	7.218E-08
Pa-231	U-235	1.000E+00	7.391E-05	2.271E-04	5.338E-04	1.607E-03	4.669E-03	1.534E-02	4.543E-02	1.462E-01
Pa-231	ΣDOSE (j)		7.391E-05	2.271E-04	5.338E-04	1.607E-03	4.669E-03	1.534E-02	4.543E-02	1.462E-01
Ac-227	Pu-239	1.000E+00	7.556E-17	9.075E-16	9.120E-15	2.105E-13	4.320E-12	1.007E-10	1.286E-09	1.593E-08
Ac-227	U-235	1.000E+00	2.803E-07	1.594E-06	7.447E-06	5.843E-05	3.988E-04	2.528E-03	9.561E-03	3.327E-02
Ac-227	ΣDOSE (j)		2.803E-07	1.594E-06	7.447E-06	5.843E-05	3.988E-04	2.528E-03	9.561E-03	3.327E-02
Pu-240	Pu-240	4.950E-08	1.429E-08	1.429E-08	1.429E-08	1.428E-08	1.424E-08	1.412E-08	1.379E-08	1.268E-08
Pu-240	Pu-240	1.000E+00	2.887E-01	2.887E-01	2.886E-01	2.884E-01	2.877E-01	2.853E-01	2.785E-01	2.561E-01
Pu-240	ΣDOSE (j)		2.887E-01	2.887E-01	2.886E-01	2.884E-01	2.877E-01	2.853E-01	2.785E-01	2.561E-01
U-236	Pu-240	1.000E+00	1.025E-09	3.160E-09	7.436E-09	2.239E-08	6.500E-08	2.129E-07	6.249E-07	1.949E-06
Th-232	Pu-240	1.000E+00	6.693E-20	4.254E-19	2.146E-18	1.870E-17	1.561E-16	1.682E-15	1.484E-14	1.574E-13
Ra-228	Pu-240	1.000E+00	5.451E-20	8.436E-19	9.574E-18	2.142E-16	3.439E-15	5.263E-14	5.185E-13	5.722E-12
Th-228	Pu-240	1.000E+00	1.454E-21	3.793E-20	7.636E-19	3.376E-17	7.974E-16	1.422E-14	1.457E-13	1.629E-12
Tc-99	Tc-99	1.000E+00	9.015E-01	9.013E-01	9.011E-01	9.001E-01	8.972E-01	8.873E-01	8.597E-01	7.695E-01
U-234	U-234	1.000E+00	7.606E-02	7.605E-02	7.604E-02	7.600E-02	7.590E-02	7.553E-02	7.448E-02	7.093E-02
U-234	U-238	9.999E-01	1.078E-07	3.234E-07	7.544E-07	2.262E-06	6.562E-06	2.152E-05	6.347E-05	2.015E-04
U-234	ΣDOSE (j)		7.606E-02	7.605E-02	7.604E-02	7.600E-02	7.590E-02	7.555E-02	7.454E-02	7.113E-02
Th-230	U-234	1.000E+00	2.353E-07	6.539E-07	1.486E-06	4.398E-06	1.271E-05	4.169E-05	1.236E-04	4.004E-04
Th-230	U-238	9.999E-01	2.373E-13	1.501E-12	7.567E-12	6.594E-11	5.506E-10	5.938E-09	5.252E-08	5.626E-07
Th-230	ΣDOSE (j)		2.353E-07	6.539E-07	1.486E-06	4.398E-06	1.271E-05	4.170E-05	1.237E-04	4.009E-04

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	5.498E-09	4.003E-08	2.151E-07	1.939E-06	1.634E-05	1.755E-04	1.517E-03	1.498E-02
Ra-226	U-238	9.999E-01	3.813E-15	5.999E-14	7.164E-13	1.923E-11	4.710E-10	1.670E-08	4.340E-07	1.451E-05
Ra-226	ΣDOSE(j)		5.498E-09	4.003E-08	2.151E-07	1.939E-06	1.634E-05	1.755E-04	1.517E-03	1.499E-02
Pb-210	U-234	1.000E+00	3.031E-11	3.037E-10	2.585E-09	5.194E-08	1.006E-06	2.290E-05	2.858E-04	3.264E-03
Pb-210	U-238	9.999E-01	1.950E-17	4.031E-16	7.204E-15	4.107E-13	2.310E-11	1.839E-09	7.493E-08	3.066E-06
Pb-210	ΣDOSE(j)		3.031E-11	3.037E-10	2.585E-09	5.194E-08	1.006E-06	2.291E-05	2.859E-04	3.267E-03
U-238	U-238	5.400E-05	3.697E-06	3.697E-06	3.696E-06	3.695E-06	3.690E-06	3.672E-06	3.624E-06	3.458E-06
U-238	U-238	9.999E-01	1.064E-01	1.064E-01	1.064E-01	1.063E-01	1.062E-01	1.057E-01	1.043E-01	9.953E-02
U-238	ΣDOSE(j)		1.064E-01	1.064E-01	1.064E-01	1.064E-01	1.062E-01	1.057E-01	1.043E-01	9.954E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 1,000 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.70 seconds

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Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Uniform CSM - AF 10,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10000.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	8.633E+00	8.629E+00	8.619E+00	8.586E+00	8.494E+00	8.182E+00	7.378E+00	3.868E+01
M(t):	3.453E-01	3.451E-01	3.448E-01	3.435E-01	3.398E-01	3.273E-01	2.951E-01	1.547E+00

Maximum TDOSE(t): 5.144E+01 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.135E-03	0.0001	1.268E-03	0.0000	0.000E+00	0.0000	9.362E-02	0.0018	1.060E-03	0.0000	1.499E-04	0.0000	1.987E-02	0.0004
Np-237	1.777E-01	0.0035	2.722E-03	0.0001	0.000E+00	0.0000	4.005E+00	0.0779	6.754E-02	0.0013	2.231E-03	0.0000	4.276E-02	0.0008
Pu-239	6.928E-05	0.0000	3.108E-03	0.0001	0.000E+00	0.0000	2.295E-01	0.0045	5.182E-03	0.0001	1.827E-04	0.0000	4.900E-02	0.0010
Pu-240	3.386E-05	0.0000	2.968E-03	0.0001	0.000E+00	0.0000	2.192E-01	0.0043	4.950E-03	0.0001	1.747E-04	0.0000	4.679E-02	0.0009
Tc-99	2.754E-05	0.0000	5.626E-08	0.0000	0.000E+00	0.0000	8.190E-01	0.0159	4.775E-04	0.0000	1.298E-02	0.0003	1.886E-05	0.0000
U-234	1.754E-03	0.0000	9.538E-04	0.0000	0.000E+00	0.0000	7.217E-02	0.0014	5.765E-03	0.0001	9.350E-03	0.0002	3.965E-03	0.0001
U-235	1.808E-01	0.0035	1.575E-03	0.0000	0.000E+00	0.0000	1.610E-01	0.0031	5.430E-03	0.0001	8.738E-03	0.0002	7.927E-03	0.0002
U-238	3.466E-02	0.0007	8.444E-04	0.0000	0.000E+00	0.0000	6.365E-02	0.0012	5.403E-03	0.0001	8.739E-03	0.0002	3.672E-03	0.0001
Total	3.992E-01	0.0078	1.344E-02	0.0003	0.000E+00	0.0000	5.663E+00	0.1101	9.581E-02	0.0019	4.255E-02	0.0008	1.740E-01	0.0034

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.467E-03	0.0000	5.583E-05	0.0000	0.000E+00	0.0000	6.788E-05	0.0000	5.031E-06	0.0000	4.224E-07	0.0000	1.217E-01	0.0024
Np-237	4.141E+01	0.8049	1.576E+00	0.0306	0.000E+00	0.0000	1.916E+00	0.0373	1.421E-01	0.0028	1.193E-02	0.0002	4.935E+01	0.9593
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.871E-01	0.0056
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.741E-01	0.0053
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.326E-01	0.0162
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.396E-02	0.0018
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.655E-01	0.0071
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.170E-01	0.0023
Total	4.141E+01	0.8049	1.576E+00	0.0306	0.000E+00	0.0000	1.917E+00	0.0373	1.421E-01	0.0028	1.193E-02	0.0002	5.144E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.068E-02	0.0012	3.297E-03	0.0004	0.000E+00	0.0000	2.419E-01	0.0280	2.731E-03	0.0003	3.890E-04	0.0000	5.163E-02	0.0060
Np-237	2.621E-01	0.0304	4.011E-03	0.0005	0.000E+00	0.0000	5.908E+00	0.6844	9.962E-02	0.0115	3.260E-03	0.0004	6.306E-02	0.0073
Pu-239	7.095E-05	0.0000	3.188E-03	0.0004	0.000E+00	0.0000	2.354E-01	0.0273	5.315E-03	0.0006	1.874E-04	0.0000	5.025E-02	0.0058
Pu-240	3.636E-05	0.0000	3.188E-03	0.0004	0.000E+00	0.0000	2.354E-01	0.0273	5.315E-03	0.0006	1.874E-04	0.0000	5.025E-02	0.0058
Tc-99	3.026E-05	0.0000	6.182E-08	0.0000	0.000E+00	0.0000	9.000E-01	0.1042	5.246E-04	0.0001	1.427E-02	0.0017	2.072E-05	0.0000
U-234	9.761E-05	0.0000	9.808E-04	0.0001	0.000E+00	0.0000	6.963E-02	0.0081	5.911E-03	0.0007	9.560E-03	0.0011	4.017E-03	0.0005
U-235	1.818E-01	0.0211	9.141E-04	0.0001	0.000E+00	0.0000	6.585E-02	0.0076	5.585E-03	0.0006	9.032E-03	0.0010	3.797E-03	0.0004
U-238	3.606E-02	0.0042	8.771E-04	0.0001	0.000E+00	0.0000	6.611E-02	0.0077	5.613E-03	0.0007	9.077E-03	0.0011	3.814E-03	0.0004
Total	4.909E-01	0.0569	1.646E-02	0.0019	0.000E+00	0.0000	7.723E+00	0.8945	1.306E-01	0.0151	4.596E-02	0.0053	2.268E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.106E-01	0.0360
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.340E+00	0.7344
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.944E-01	0.0341
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.944E-01	0.0341
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.148E-01	0.1060
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.020E-02	0.0104
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.670E-01	0.0309
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.216E-01	0.0141
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.633E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.067E-02	0.0012	3.291E-03	0.0004	0.000E+00	0.0000	2.415E-01	0.0280	2.726E-03	0.0003	3.884E-04	0.0000	5.155E-02	0.0060
Np-237	2.619E-01	0.0304	4.009E-03	0.0005	0.000E+00	0.0000	5.904E+00	0.6843	9.956E-02	0.0115	3.258E-03	0.0004	6.302E-02	0.0073
Pu-239	7.094E-05	0.0000	3.188E-03	0.0004	0.000E+00	0.0000	2.354E-01	0.0273	5.315E-03	0.0006	1.874E-04	0.0000	5.025E-02	0.0058
Pu-240	3.636E-05	0.0000	3.187E-03	0.0004	0.000E+00	0.0000	2.354E-01	0.0273	5.314E-03	0.0006	1.874E-04	0.0000	5.024E-02	0.0058
Tc-99	3.026E-05	0.0000	6.181E-08	0.0000	0.000E+00	0.0000	8.998E-01	0.1043	5.246E-04	0.0001	1.426E-02	0.0017	2.072E-05	0.0000
U-234	9.762E-05	0.0000	9.808E-04	0.0001	0.000E+00	0.0000	6.963E-02	0.0081	5.911E-03	0.0007	9.560E-03	0.0011	4.017E-03	0.0005
U-235	1.818E-01	0.0211	9.142E-04	0.0001	0.000E+00	0.0000	6.600E-02	0.0076	5.584E-03	0.0006	9.031E-03	0.0010	3.800E-03	0.0004
U-238	3.606E-02	0.0042	8.770E-04	0.0001	0.000E+00	0.0000	6.611E-02	0.0077	5.612E-03	0.0007	9.077E-03	0.0011	3.814E-03	0.0004
Total	4.907E-01	0.0569	1.645E-02	0.0019	0.000E+00	0.0000	7.718E+00	0.8945	1.305E-01	0.0151	4.595E-02	0.0053	2.267E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.101E-01	0.0359
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.336E+00	0.7343
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.944E-01	0.0341
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.944E-01	0.0341
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.147E-01	0.1060
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.019E-02	0.0105
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.671E-01	0.0310
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.216E-01	0.0141
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.629E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.063E-02	0.0012	3.281E-03	0.0004	0.000E+00	0.0000	2.407E-01	0.0279	2.718E-03	0.0003	3.871E-04	0.0000	5.138E-02	0.0060
Np-237	2.616E-01	0.0303	4.004E-03	0.0005	0.000E+00	0.0000	5.897E+00	0.6841	9.943E-02	0.0115	3.254E-03	0.0004	6.294E-02	0.0073
Pu-239	7.094E-05	0.0000	3.187E-03	0.0004	0.000E+00	0.0000	2.354E-01	0.0273	5.315E-03	0.0006	1.874E-04	0.0000	5.025E-02	0.0058
Pu-240	3.635E-05	0.0000	3.186E-03	0.0004	0.000E+00	0.0000	2.353E-01	0.0273	5.313E-03	0.0006	1.873E-04	0.0000	5.023E-02	0.0058
Tc-99	3.025E-05	0.0000	6.179E-08	0.0000	0.000E+00	0.0000	8.995E-01	0.1044	5.244E-04	0.0001	1.426E-02	0.0017	2.071E-05	0.0000
U-234	9.766E-05	0.0000	9.807E-04	0.0001	0.000E+00	0.0000	6.962E-02	0.0081	5.910E-03	0.0007	9.558E-03	0.0011	4.017E-03	0.0005
U-235	1.818E-01	0.0211	9.147E-04	0.0001	0.000E+00	0.0000	6.629E-02	0.0077	5.584E-03	0.0006	9.030E-03	0.0010	3.806E-03	0.0004
U-238	3.606E-02	0.0042	8.769E-04	0.0001	0.000E+00	0.0000	6.610E-02	0.0077	5.612E-03	0.0007	9.076E-03	0.0011	3.814E-03	0.0004
Total	4.903E-01	0.0569	1.643E-02	0.0019	0.000E+00	0.0000	7.710E+00	0.8945	1.304E-01	0.0151	4.594E-02	0.0053	2.265E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.091E-01	0.0359
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.328E+00	0.7342
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.944E-01	0.0342
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.943E-01	0.0341
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.144E-01	0.1061
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.018E-02	0.0105
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.674E-01	0.0310
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.215E-01	0.0141
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.619E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.051E-02	0.0012	3.244E-03	0.0004	0.000E+00	0.0000	2.380E-01	0.0277	2.687E-03	0.0003	3.828E-04	0.0000	5.081E-02	0.0059
Np-237	2.604E-01	0.0303	3.985E-03	0.0005	0.000E+00	0.0000	5.870E+00	0.6836	9.897E-02	0.0115	3.240E-03	0.0004	6.265E-02	0.0073
Pu-239	7.092E-05	0.0000	3.186E-03	0.0004	0.000E+00	0.0000	2.353E-01	0.0274	5.313E-03	0.0006	1.873E-04	0.0000	5.023E-02	0.0059
Pu-240	3.632E-05	0.0000	3.184E-03	0.0004	0.000E+00	0.0000	2.351E-01	0.0274	5.309E-03	0.0006	1.872E-04	0.0000	5.019E-02	0.0058
Tc-99	3.022E-05	0.0000	6.172E-08	0.0000	0.000E+00	0.0000	8.985E-01	0.1046	5.238E-04	0.0001	1.424E-02	0.0017	2.069E-05	0.0000
U-234	9.814E-05	0.0000	9.804E-04	0.0001	0.000E+00	0.0000	6.959E-02	0.0081	5.907E-03	0.0007	9.554E-03	0.0011	4.015E-03	0.0005
U-235	1.817E-01	0.0212	9.171E-04	0.0001	0.000E+00	0.0000	6.733E-02	0.0078	5.581E-03	0.0007	9.026E-03	0.0011	3.833E-03	0.0004
U-238	3.604E-02	0.0042	8.765E-04	0.0001	0.000E+00	0.0000	6.607E-02	0.0077	5.609E-03	0.0007	9.072E-03	0.0011	3.812E-03	0.0004
Total	4.889E-01	0.0569	1.637E-02	0.0019	0.000E+00	0.0000	7.680E+00	0.8944	1.299E-01	0.0151	4.589E-02	0.0053	2.256E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.057E-01	0.0356
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.299E+00	0.7336
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.943E-01	0.0343
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.940E-01	0.0342
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.134E-01	0.1064
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.014E-02	0.0105
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.684E-01	0.0313
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.215E-01	0.0141
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.586E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.018E-02	0.0012	3.142E-03	0.0004	0.000E+00	0.0000	2.306E-01	0.0271	2.603E-03	0.0003	3.707E-04	0.0000	4.920E-02	0.0058
Np-237	2.570E-01	0.0303	3.934E-03	0.0005	0.000E+00	0.0000	5.794E+00	0.6821	9.769E-02	0.0115	3.198E-03	0.0004	6.184E-02	0.0073
Pu-239	7.086E-05	0.0000	3.184E-03	0.0004	0.000E+00	0.0000	2.351E-01	0.0277	5.308E-03	0.0006	1.872E-04	0.0000	5.019E-02	0.0059
Pu-240	3.623E-05	0.0000	3.176E-03	0.0004	0.000E+00	0.0000	2.346E-01	0.0276	5.296E-03	0.0006	1.867E-04	0.0000	5.007E-02	0.0059
Tc-99	3.012E-05	0.0000	6.153E-08	0.0000	0.000E+00	0.0000	8.957E-01	0.1055	5.222E-04	0.0001	1.420E-02	0.0017	2.063E-05	0.0000
U-234	1.023E-04	0.0000	9.794E-04	0.0001	0.000E+00	0.0000	6.951E-02	0.0082	5.899E-03	0.0007	9.541E-03	0.0011	4.011E-03	0.0005
U-235	1.816E-01	0.0214	9.299E-04	0.0001	0.000E+00	0.0000	7.042E-02	0.0083	5.575E-03	0.0007	9.016E-03	0.0011	3.933E-03	0.0005
U-238	3.599E-02	0.0042	8.754E-04	0.0001	0.000E+00	0.0000	6.599E-02	0.0078	5.602E-03	0.0007	9.060E-03	0.0011	3.807E-03	0.0004
Total	4.850E-01	0.0571	1.622E-02	0.0019	0.000E+00	0.0000	7.595E+00	0.8942	1.285E-01	0.0151	4.576E-02	0.0054	2.231E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.961E-01	0.0349
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.217E+00	0.7320
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.941E-01	0.0346
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.933E-01	0.0345
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.105E-01	0.1072
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.004E-02	0.0106
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.714E-01	0.0320
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.213E-01	0.0143
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.494E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.106E-03	0.0011	2.808E-03	0.0003	0.000E+00	0.0000	2.062E-01	0.0252	2.328E-03	0.0003	3.314E-04	0.0000	4.397E-02	0.0054
Np-237	2.455E-01	0.0300	3.758E-03	0.0005	0.000E+00	0.0000	5.535E+00	0.6764	9.332E-02	0.0114	3.058E-03	0.0004	5.907E-02	0.0072
Pu-239	7.066E-05	0.0000	3.174E-03	0.0004	0.000E+00	0.0000	2.344E-01	0.0287	5.293E-03	0.0006	1.866E-04	0.0000	5.004E-02	0.0061
Pu-240	3.593E-05	0.0000	3.150E-03	0.0004	0.000E+00	0.0000	2.326E-01	0.0284	5.252E-03	0.0006	1.852E-04	0.0000	4.965E-02	0.0061
Tc-99	2.979E-05	0.0000	6.085E-08	0.0000	0.000E+00	0.0000	8.858E-01	0.1083	5.164E-04	0.0001	1.404E-02	0.0017	2.040E-05	0.0000
U-234	1.485E-04	0.0000	9.762E-04	0.0001	0.000E+00	0.0000	6.933E-02	0.0085	5.873E-03	0.0007	9.499E-03	0.0012	3.998E-03	0.0005
U-235	1.814E-01	0.0222	1.002E-03	0.0001	0.000E+00	0.0000	8.173E-02	0.0100	5.556E-03	0.0007	8.981E-03	0.0011	4.400E-03	0.0005
U-238	3.582E-02	0.0044	8.715E-04	0.0001	0.000E+00	0.0000	6.569E-02	0.0080	5.577E-03	0.0007	9.020E-03	0.0011	3.790E-03	0.0005
Total	4.721E-01	0.0577	1.574E-02	0.0019	0.000E+00	0.0000	7.310E+00	0.8934	1.237E-01	0.0151	4.530E-02	0.0055	2.149E-01	0.0263

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.647E-01	0.0324
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.939E+00	0.7259
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.932E-01	0.0358
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.909E-01	0.0356
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.004E-01	0.1100
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.982E-02	0.0110
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.831E-01	0.0346
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.208E-01	0.0148
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.182E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.617E-03	0.0009	2.037E-03	0.0003	0.000E+00	0.0000	1.498E-01	0.0203	1.694E-03	0.0002	2.405E-04	0.0000	3.190E-02	0.0043
Np-237	2.154E-01	0.0292	3.299E-03	0.0004	0.000E+00	0.0000	4.857E+00	0.6583	8.190E-02	0.0111	2.692E-03	0.0004	5.184E-02	0.0070
Pu-239	7.010E-05	0.0000	3.147E-03	0.0004	0.000E+00	0.0000	2.324E-01	0.0315	5.248E-03	0.0007	1.850E-04	0.0000	4.962E-02	0.0067
Pu-240	3.508E-05	0.0000	3.075E-03	0.0004	0.000E+00	0.0000	2.271E-01	0.0308	5.128E-03	0.0007	1.809E-04	0.0000	4.848E-02	0.0066
Tc-99	2.886E-05	0.0000	5.895E-08	0.0000	0.000E+00	0.0000	8.582E-01	0.1163	5.003E-04	0.0001	1.360E-02	0.0018	1.976E-05	0.0000
U-234	5.401E-04	0.0001	9.670E-04	0.0001	0.000E+00	0.0000	6.964E-02	0.0094	5.814E-03	0.0008	9.408E-03	0.0013	3.972E-03	0.0005
U-235	1.812E-01	0.0246	1.236E-03	0.0002	0.000E+00	0.0000	1.142E-01	0.0155	5.505E-03	0.0007	8.882E-03	0.0012	5.842E-03	0.0008
U-238	3.535E-02	0.0048	8.605E-04	0.0001	0.000E+00	0.0000	6.486E-02	0.0088	5.506E-03	0.0007	8.905E-03	0.0012	3.742E-03	0.0005
Total	4.392E-01	0.0595	1.462E-02	0.0020	0.000E+00	0.0000	6.573E+00	0.8909	1.113E-01	0.0151	4.410E-02	0.0060	1.954E-01	0.0265

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.923E-01	0.0261
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.212E+00	0.7064
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.907E-01	0.0394
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.840E-01	0.0385
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.724E-01	0.1182
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.034E-02	0.0122
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.169E-01	0.0429
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.192E-01	0.0162
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.378E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.173E-03	0.0001	6.622E-04	0.0000	0.000E+00	0.0000	4.920E-02	0.0013	5.590E-04	0.0000	7.844E-05	0.0000	1.037E-02	0.0003
Np-237	1.364E-01	0.0035	2.093E-03	0.0001	0.000E+00	0.0000	3.074E+00	0.0795	5.185E-02	0.0013	1.727E-03	0.0000	3.283E-02	0.0008
Pu-239	6.817E-05	0.0000	3.055E-03	0.0001	0.000E+00	0.0000	2.256E-01	0.0058	5.094E-03	0.0001	1.796E-04	0.0000	4.816E-02	0.0012
Pu-240	3.226E-05	0.0000	2.828E-03	0.0001	0.000E+00	0.0000	2.088E-01	0.0054	4.715E-03	0.0001	1.665E-04	0.0000	4.458E-02	0.0012
Tc-99	2.583E-05	0.0000	5.277E-08	0.0000	0.000E+00	0.0000	7.682E-01	0.0199	4.478E-04	0.0000	1.218E-02	0.0003	1.769E-05	0.0000
U-234	4.475E-03	0.0001	9.361E-04	0.0000	0.000E+00	0.0000	7.906E-02	0.0020	5.763E-03	0.0001	9.394E-03	0.0002	4.006E-03	0.0001
U-235	1.803E-01	0.0047	2.023E-03	0.0001	0.000E+00	0.0000	2.231E-01	0.0058	5.330E-03	0.0001	8.544E-03	0.0002	1.069E-02	0.0003
U-238	3.373E-02	0.0009	8.229E-04	0.0000	0.000E+00	0.0000	6.203E-02	0.0016	5.265E-03	0.0001	8.516E-03	0.0002	3.579E-03	0.0001
Total	3.573E-01	0.0092	1.242E-02	0.0003	0.000E+00	0.0000	4.690E+00	0.1213	7.902E-02	0.0020	4.078E-02	0.0011	1.542E-01	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.079E-03	0.0001	1.553E-04	0.0000	0.000E+00	0.0000	1.888E-04	0.0000	1.400E-05	0.0000	1.176E-06	0.0000	6.748E-02	0.0017
Np-237	3.064E+01	0.7922	1.166E+00	0.0302	0.000E+00	0.0000	1.418E+00	0.0367	1.052E-01	0.0027	8.838E-03	0.0002	3.664E+01	0.9473
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.822E-01	0.0073
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.612E-01	0.0068
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.809E-01	0.0202
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.036E-01	0.0027
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.300E-01	0.0111
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.140E-01	0.0029
Total	3.064E+01	0.7923	1.167E+00	0.0302	0.000E+00	0.0000	1.418E+00	0.0367	1.052E-01	0.0027	8.840E-03	0.0002	3.868E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.106E-01	3.101E-01	3.091E-01	3.057E-01	2.960E-01	2.645E-01	1.919E-01	6.235E-02
Am-241	Np-237+D	1.000E+00	9.691E-07	3.014E-06	7.099E-06	2.125E-05	6.048E-05	1.843E-04	4.411E-04	5.128E-03
Am-241	U-233	1.000E+00	2.880E-14	1.748E-13	8.575E-13	7.317E-12	5.988E-11	6.127E-10	4.701E-09	1.053E-07
Am-241	Th-229+D	1.000E+00	4.827E-18	6.562E-17	7.322E-16	1.890E-14	4.534E-13	1.551E-11	3.680E-10	9.262E-09
Am-241	ΣDSR (j)		3.106E-01	3.101E-01	3.091E-01	3.057E-01	2.961E-01	2.647E-01	1.923E-01	6.748E-02
Np-237+D	Np-237+D	1.000E+00	6.340E+00	6.336E+00	6.328E+00	6.299E+00	6.217E+00	5.939E+00	5.212E+00	3.663E+01
Np-237+D	U-233	1.000E+00	2.456E-07	6.531E-07	1.459E-06	4.272E-06	1.223E-05	3.919E-05	1.090E-04	1.354E-03
Np-237+D	Th-229+D	1.000E+00	5.682E-11	3.688E-10	1.892E-09	1.664E-08	1.389E-07	1.477E-06	1.250E-05	1.170E-04
Np-237+D	ΣDSR (j)		6.340E+00	6.336E+00	6.328E+00	6.299E+00	6.217E+00	5.939E+00	5.212E+00	3.664E+01
Pu-239	Pu-239	1.000E+00	2.944E-01	2.944E-01	2.944E-01	2.943E-01	2.941E-01	2.932E-01	2.907E-01	2.822E-01
Pu-239	U-235+D	1.000E+00	1.296E-10	3.923E-10	9.179E-10	2.757E-09	8.002E-09	2.627E-08	7.770E-08	2.490E-07
Pu-239	Pa-231	1.000E+00	2.386E-14	1.724E-13	9.230E-13	8.311E-12	7.018E-11	7.600E-10	6.734E-09	7.226E-08
Pu-239	Ac-227+D	1.000E+00	7.672E-17	9.235E-16	9.301E-15	2.150E-13	4.415E-12	1.029E-10	1.314E-09	1.628E-08
Pu-239	ΣDSR (j)		2.944E-01	2.944E-01	2.944E-01	2.943E-01	2.941E-01	2.932E-01	2.907E-01	2.822E-01
Pu-240	Pu-240	4.950E-08	1.457E-08	1.457E-08	1.457E-08	1.455E-08	1.452E-08	1.440E-08	1.406E-08	1.293E-08
Pu-240	Pu-240	1.000E+00	2.944E-01	2.944E-01	2.943E-01	2.940E-01	2.933E-01	2.909E-01	2.840E-01	2.612E-01
Pu-240	U-236	1.000E+00	1.214E-09	3.746E-09	8.817E-09	2.655E-08	7.709E-08	2.525E-07	7.412E-07	2.312E-06
Pu-240	Th-232	1.000E+00	7.049E-20	4.433E-19	2.223E-18	1.931E-17	1.610E-16	1.733E-15	1.529E-14	1.622E-13
Pu-240	Ra-228+D	1.000E+00	5.614E-20	8.707E-19	9.893E-18	2.215E-16	3.557E-15	5.445E-14	5.364E-13	5.919E-12
Pu-240	Th-228+D	1.000E+00	1.513E-21	3.959E-20	7.984E-19	3.534E-17	8.350E-16	1.490E-14	1.526E-13	1.706E-12
Pu-240	ΣDSR (j)		2.944E-01	2.944E-01	2.943E-01	2.940E-01	2.933E-01	2.909E-01	2.840E-01	2.612E-01
Tc-99	Tc-99	1.000E+00	9.148E-01	9.147E-01	9.144E-01	9.134E-01	9.105E-01	9.004E-01	8.724E-01	7.809E-01
U-234	U-234	1.000E+00	9.020E-02	9.019E-02	9.018E-02	9.014E-02	9.001E-02	8.957E-02	8.833E-02	8.412E-02
U-234	Th-230	1.000E+00	2.463E-07	6.781E-07	1.536E-06	4.536E-06	1.310E-05	4.296E-05	1.274E-04	4.126E-04
U-234	Ra-226+D	1.000E+00	5.682E-09	4.143E-08	2.228E-07	2.009E-06	1.693E-05	1.819E-04	1.572E-03	1.552E-02
U-234	Pb-210+D	1.000E+00	3.188E-11	3.239E-10	2.787E-09	5.649E-08	1.098E-06	2.505E-05	3.127E-04	3.571E-03
U-234	ΣDSR (j)		9.020E-02	9.019E-02	9.018E-02	9.014E-02	9.004E-02	8.982E-02	9.034E-02	1.036E-01
U-235+D	U-235+D	1.000E+00	2.669E-01	2.669E-01	2.668E-01	2.667E-01	2.664E-01	2.651E-01	2.616E-01	2.496E-01
U-235+D	Pa-231	1.000E+00	7.422E-05	2.276E-04	5.346E-04	1.609E-03	4.675E-03	1.536E-02	4.548E-02	1.464E-01
U-235+D	Ac-227+D	1.000E+00	2.848E-07	1.623E-06	7.600E-06	5.971E-05	4.076E-04	2.585E-03	9.775E-03	3.401E-02
U-235+D	ΣDSR (j)		2.670E-01	2.671E-01	2.674E-01	2.684E-01	2.714E-01	2.831E-01	3.169E-01	4.300E-01
U-238	U-238	5.400E-05	4.385E-06	4.385E-06	4.384E-06	4.382E-06	4.376E-06	4.356E-06	4.298E-06	4.101E-06
U-238+D	U-238+D	9.999E-01	1.216E-01	1.215E-01	1.215E-01	1.215E-01	1.213E-01	1.207E-01	1.191E-01	1.137E-01
U-238+D	U-234	9.999E-01	1.278E-07	3.835E-07	8.947E-07	2.683E-06	7.783E-06	2.552E-05	7.528E-05	2.389E-04
U-238+D	Th-230	9.999E-01	2.502E-13	1.564E-12	7.839E-12	6.807E-11	5.677E-10	6.120E-09	5.412E-08	5.797E-07
U-238+D	Ra-226+D	9.999E-01	3.938E-15	6.206E-14	7.418E-13	1.992E-11	4.882E-10	1.731E-08	4.499E-07	1.504E-05
U-238+D	Pb-210+D	9.999E-01	2.042E-17	4.280E-16	7.739E-15	4.459E-13	2.520E-11	2.011E-09	8.197E-08	3.355E-06
U-238+D	ΣDSR (j)		1.216E-01	1.215E-01	1.215E-01	1.215E-01	1.213E-01	1.208E-01	1.192E-01	1.139E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		8.049E+01	8.061E+01	8.087E+01	8.178E+01	8.444E+01	9.444E+01	1.300E+02	3.705E+02
Np-237		3.943E+00	3.946E+00	3.951E+00	3.969E+00	4.021E+00	4.209E+00	4.797E+00	6.824E-01
Pu-239		8.491E+01	8.491E+01	8.492E+01	8.494E+01	8.502E+01	8.527E+01	8.600E+01	8.860E+01
Pu-240		8.492E+01	8.493E+01	8.495E+01	8.502E+01	8.523E+01	8.594E+01	8.803E+01	9.572E+01
Tc-99		2.733E+01	2.733E+01	2.734E+01	2.737E+01	2.746E+01	2.776E+01	2.866E+01	3.202E+01
U-234		2.772E+02	2.772E+02	2.772E+02	2.773E+02	2.777E+02	2.783E+02	2.767E+02	2.412E+02
U-235		9.364E+01	9.359E+01	9.350E+01	9.315E+01	9.210E+01	8.832E+01	7.890E+01	5.814E+01
U-238		2.057E+02	2.057E+02	2.057E+02	2.058E+02	2.061E+02	2.070E+02	2.097E+02	2.194E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	3.106E-01	8.049E+01	1.217E-01	2.054E+02
Np-237	1.000E+00	595 ± 1	4.935E+01	5.066E-01	4.935E+01	5.066E-01
Pu-239	1.000E+00	0.000E+00	2.944E-01	8.491E+01	2.871E-01	8.708E+01
Pu-240	1.000E+00	0.000E+00	2.944E-01	8.492E+01	2.741E-01	9.119E+01
Tc-99	1.000E+00	0.000E+00	9.148E-01	2.733E+01	8.326E-01	3.003E+01
U-234	1.000E+00	1.000E+03	1.036E-01	2.412E+02	9.396E-02	2.661E+02
U-235	1.000E+00	1.000E+03	4.300E-01	5.814E+01	3.655E-01	6.839E+01
U-238	1.000E+00	0.000E+00	1.216E-01	2.057E+02	1.170E-01	2.137E+02

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.106E-01	3.101E-01	3.091E-01	3.057E-01	2.960E-01	2.645E-01	1.919E-01	6.235E-02
Np-237	Am-241	1.000E+00	9.691E-07	3.014E-06	7.099E-06	2.125E-05	6.048E-05	1.843E-04	4.411E-04	5.128E-03
Np-237	Np-237	1.000E+00	6.340E+00	6.336E+00	6.328E+00	6.299E+00	6.217E+00	5.939E+00	5.212E+00	3.663E+01
Np-237	ΣDOSE (j)		6.340E+00	6.336E+00	6.328E+00	6.299E+00	6.217E+00	5.939E+00	5.212E+00	3.664E+01
U-233	Am-241	1.000E+00	2.880E-14	1.748E-13	8.575E-13	7.317E-12	5.988E-11	6.127E-10	4.701E-09	1.053E-07
U-233	Np-237	1.000E+00	2.456E-07	6.531E-07	1.459E-06	4.272E-06	1.223E-05	3.919E-05	1.090E-04	1.354E-03
U-233	ΣDOSE (j)		2.456E-07	6.531E-07	1.459E-06	4.272E-06	1.223E-05	3.919E-05	1.090E-04	1.354E-03
Th-229	Am-241	1.000E+00	4.827E-18	6.562E-17	7.322E-16	1.890E-14	4.534E-13	1.551E-11	3.680E-10	9.262E-09
Th-229	Np-237	1.000E+00	5.682E-11	3.688E-10	1.892E-09	1.664E-08	1.389E-07	1.477E-06	1.250E-05	1.170E-04
Th-229	ΣDOSE (j)		5.682E-11	3.688E-10	1.892E-09	1.664E-08	1.389E-07	1.477E-06	1.250E-05	1.170E-04
Pu-239	Pu-239	1.000E+00	2.944E-01	2.944E-01	2.944E-01	2.943E-01	2.941E-01	2.932E-01	2.907E-01	2.822E-01
U-235	Pu-239	1.000E+00	1.296E-10	3.923E-10	9.179E-10	2.757E-09	8.002E-09	2.627E-08	7.770E-08	2.490E-07
U-235	U-235	1.000E+00	2.669E-01	2.669E-01	2.668E-01	2.667E-01	2.664E-01	2.651E-01	2.616E-01	2.496E-01
U-235	ΣDOSE (j)		2.669E-01	2.669E-01	2.668E-01	2.667E-01	2.664E-01	2.651E-01	2.616E-01	2.496E-01
Pa-231	Pu-239	1.000E+00	2.386E-14	1.724E-13	9.230E-13	8.311E-12	7.018E-11	7.600E-10	6.734E-09	7.226E-08
Pa-231	U-235	1.000E+00	7.422E-05	2.276E-04	5.346E-04	1.609E-03	4.675E-03	1.536E-02	4.548E-02	1.464E-01
Pa-231	ΣDOSE (j)		7.422E-05	2.276E-04	5.346E-04	1.609E-03	4.675E-03	1.536E-02	4.548E-02	1.464E-01
Ac-227	Pu-239	1.000E+00	7.672E-17	9.235E-16	9.301E-15	2.150E-13	4.415E-12	1.029E-10	1.314E-09	1.628E-08
Ac-227	U-235	1.000E+00	2.848E-07	1.623E-06	7.600E-06	5.971E-05	4.076E-04	2.585E-03	9.775E-03	3.401E-02
Ac-227	ΣDOSE (j)		2.848E-07	1.623E-06	7.600E-06	5.971E-05	4.076E-04	2.585E-03	9.775E-03	3.401E-02
Pu-240	Pu-240	4.950E-08	1.457E-08	1.457E-08	1.457E-08	1.455E-08	1.452E-08	1.440E-08	1.406E-08	1.293E-08
Pu-240	Pu-240	1.000E+00	2.944E-01	2.944E-01	2.943E-01	2.940E-01	2.933E-01	2.909E-01	2.840E-01	2.612E-01
Pu-240	ΣDOSE (j)		2.944E-01	2.944E-01	2.943E-01	2.940E-01	2.933E-01	2.909E-01	2.840E-01	2.612E-01
U-236	Pu-240	1.000E+00	1.214E-09	3.746E-09	8.817E-09	2.655E-08	7.709E-08	2.525E-07	7.412E-07	2.312E-06
Th-232	Pu-240	1.000E+00	7.049E-20	4.433E-19	2.223E-18	1.931E-17	1.610E-16	1.733E-15	1.529E-14	1.622E-13
Ra-228	Pu-240	1.000E+00	5.614E-20	8.707E-19	9.893E-18	2.215E-16	3.557E-15	5.445E-14	5.364E-13	5.919E-12
Th-228	Pu-240	1.000E+00	1.513E-21	3.959E-20	7.984E-19	3.534E-17	8.350E-16	1.490E-14	1.526E-13	1.706E-12
Tc-99	Tc-99	1.000E+00	9.148E-01	9.147E-01	9.144E-01	9.134E-01	9.105E-01	9.004E-01	8.724E-01	7.809E-01
U-234	U-234	1.000E+00	9.020E-02	9.019E-02	9.018E-02	9.014E-02	9.001E-02	8.957E-02	8.833E-02	8.412E-02
U-234	U-238	9.999E-01	1.278E-07	3.835E-07	8.947E-07	2.683E-06	7.783E-06	2.552E-05	7.528E-05	2.389E-04
U-234	ΣDOSE (j)		9.020E-02	9.019E-02	9.018E-02	9.014E-02	9.002E-02	8.960E-02	8.841E-02	8.436E-02
Th-230	U-234	1.000E+00	2.463E-07	6.781E-07	1.536E-06	4.536E-06	1.310E-05	4.296E-05	1.274E-04	4.126E-04
Th-230	U-238	9.999E-01	2.502E-13	1.564E-12	7.839E-12	6.807E-11	5.677E-10	6.120E-09	5.412E-08	5.797E-07
Th-230	ΣDOSE (j)		2.463E-07	6.781E-07	1.536E-06	4.536E-06	1.310E-05	4.297E-05	1.274E-04	4.131E-04

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	5.682E-09	4.143E-08	2.228E-07	2.009E-06	1.693E-05	1.819E-04	1.572E-03	1.552E-02
Ra-226	U-238	9.999E-01	3.938E-15	6.206E-14	7.418E-13	1.992E-11	4.882E-10	1.731E-08	4.499E-07	1.504E-05
Ra-226	ΣDOSE(j)		5.682E-09	4.143E-08	2.228E-07	2.009E-06	1.694E-05	1.819E-04	1.573E-03	1.554E-02
Pb-210	U-234	1.000E+00	3.188E-11	3.239E-10	2.787E-09	5.649E-08	1.098E-06	2.505E-05	3.127E-04	3.571E-03
Pb-210	U-238	9.999E-01	2.042E-17	4.280E-16	7.739E-15	4.459E-13	2.520E-11	2.011E-09	8.197E-08	3.355E-06
Pb-210	ΣDOSE(j)		3.188E-11	3.239E-10	2.787E-09	5.649E-08	1.099E-06	2.505E-05	3.128E-04	3.575E-03
U-238	U-238	5.400E-05	4.385E-06	4.385E-06	4.384E-06	4.382E-06	4.376E-06	4.356E-06	4.298E-06	4.101E-06
U-238	U-238	9.999E-01	1.216E-01	1.215E-01	1.215E-01	1.215E-01	1.213E-01	1.207E-01	1.191E-01	1.137E-01
U-238	ΣDOSE(j)		1.216E-01	1.216E-01	1.215E-01	1.215E-01	1.213E-01	1.207E-01	1.191E-01	1.137E-01

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM - AF 10,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 10,000 m²

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.48 seconds

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Summary : Hematite - Uniform CSM - AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM - AF 3 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

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Appendix N

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.536E-01	1.536E-01	1.534E-01	1.530E-01	1.517E-01	1.474E-01	1.364E-01	1.186E-01
M(t):	6.145E-03	6.142E-03	6.137E-03	6.118E-03	6.066E-03	5.894E-03	5.455E-03	4.746E-03

Maximum TDOSE(t): 1.536E-01 mrem/yr at t = 0.000E+00 years

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.839E-03	0.0185	1.353E-03	0.0088	0.000E+00	0.0000	7.256E-04	0.0047	8.192E-07	0.0000	1.167E-07	0.0000	1.549E-04	0.0010
Np-237	6.530E-02	0.4251	1.647E-03	0.0107	0.000E+00	0.0000	1.772E-02	0.1154	2.989E-05	0.0002	9.781E-07	0.0000	1.892E-04	0.0012
Pu-239	1.828E-05	0.0001	1.309E-03	0.0085	0.000E+00	0.0000	7.062E-04	0.0046	1.595E-06	0.0000	5.622E-08	0.0000	1.508E-04	0.0010
Pu-240	1.100E-05	0.0001	1.309E-03	0.0085	0.000E+00	0.0000	7.062E-04	0.0046	1.595E-06	0.0000	5.622E-08	0.0000	1.508E-04	0.0010
Tc-99	7.782E-06	0.0001	2.538E-08	0.0000	0.000E+00	0.0000	2.700E-03	0.0176	1.574E-07	0.0000	4.280E-06	0.0000	6.217E-08	0.0000
U-234	2.612E-05	0.0002	4.027E-04	0.0026	0.000E+00	0.0000	2.089E-04	0.0014	1.773E-06	0.0000	2.868E-06	0.0000	1.205E-05	0.0001
U-235	4.603E-02	0.2997	3.753E-04	0.0024	0.000E+00	0.0000	1.976E-04	0.0013	1.675E-06	0.0000	2.709E-06	0.0000	1.139E-05	0.0001
U-238	8.726E-03	0.0568	3.601E-04	0.0023	0.000E+00	0.0000	1.983E-04	0.0013	1.684E-06	0.0000	2.723E-06	0.0000	1.144E-05	0.0001
Total	1.230E-01	0.8004	6.756E-03	0.0440	0.000E+00	0.0000	2.317E-02	0.1508	3.918E-05	0.0003	1.379E-05	0.0001	6.805E-04	0.0044

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.074E-03	0.0330
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.489E-02	0.5526
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.186E-03	0.0142
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.178E-03	0.0142
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.712E-03	0.0177
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.544E-04	0.0043
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.662E-02	0.3035
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.301E-03	0.0605
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.536E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.835E-03	0.0185	1.351E-03	0.0088	0.000E+00	0.0000	7.245E-04	0.0047	8.179E-07	0.0000	1.165E-07	0.0000	1.546E-04	0.0010
Np-237	6.526E-02	0.4250	1.646E-03	0.0107	0.000E+00	0.0000	1.771E-02	0.1154	2.987E-05	0.0002	9.775E-07	0.0000	1.891E-04	0.0012
Pu-239	1.828E-05	0.0001	1.309E-03	0.0085	0.000E+00	0.0000	7.062E-04	0.0046	1.594E-06	0.0000	5.622E-08	0.0000	1.508E-04	0.0010
Pu-240	1.100E-05	0.0001	1.309E-03	0.0085	0.000E+00	0.0000	7.061E-04	0.0046	1.594E-06	0.0000	5.621E-08	0.0000	1.507E-04	0.0010
Tc-99	7.781E-06	0.0001	2.538E-08	0.0000	0.000E+00	0.0000	2.699E-03	0.0176	1.574E-07	0.0000	4.279E-06	0.0000	6.216E-08	0.0000
U-234	2.612E-05	0.0002	4.027E-04	0.0026	0.000E+00	0.0000	2.089E-04	0.0014	1.773E-06	0.0000	2.868E-06	0.0000	1.205E-05	0.0001
U-235	4.603E-02	0.2998	3.753E-04	0.0024	0.000E+00	0.0000	1.980E-04	0.0013	1.675E-06	0.0000	2.709E-06	0.0000	1.140E-05	0.0001
U-238	8.726E-03	0.0568	3.601E-04	0.0023	0.000E+00	0.0000	1.983E-04	0.0013	1.684E-06	0.0000	2.723E-06	0.0000	1.144E-05	0.0001
Total	1.229E-01	0.8005	6.752E-03	0.0440	0.000E+00	0.0000	2.315E-02	0.1508	3.916E-05	0.0003	1.379E-05	0.0001	6.801E-04	0.0044

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.066E-03	0.0330
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.484E-02	0.5525
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.186E-03	0.0142
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.178E-03	0.0142
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.712E-03	0.0177
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.544E-04	0.0043
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.662E-02	0.3036
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.300E-03	0.0606
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.536E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.826E-03	0.0184	1.347E-03	0.0088	0.000E+00	0.0000	7.222E-04	0.0047	8.153E-07	0.0000	1.161E-07	0.0000	1.542E-04	0.0010
Np-237	6.517E-02	0.4248	1.644E-03	0.0107	0.000E+00	0.0000	1.769E-02	0.1153	2.983E-05	0.0002	9.763E-07	0.0000	1.888E-04	0.0012
Pu-239	1.827E-05	0.0001	1.309E-03	0.0085	0.000E+00	0.0000	7.061E-04	0.0046	1.594E-06	0.0000	5.621E-08	0.0000	1.507E-04	0.0010
Pu-240	1.100E-05	0.0001	1.308E-03	0.0085	0.000E+00	0.0000	7.060E-04	0.0046	1.594E-06	0.0000	5.620E-08	0.0000	1.507E-04	0.0010
Tc-99	7.778E-06	0.0001	2.537E-08	0.0000	0.000E+00	0.0000	2.699E-03	0.0176	1.573E-07	0.0000	4.278E-06	0.0000	6.214E-08	0.0000
U-234	2.613E-05	0.0002	4.026E-04	0.0026	0.000E+00	0.0000	2.089E-04	0.0014	1.773E-06	0.0000	2.867E-06	0.0000	1.205E-05	0.0001
U-235	4.603E-02	0.3000	3.755E-04	0.0024	0.000E+00	0.0000	1.989E-04	0.0013	1.675E-06	0.0000	2.709E-06	0.0000	1.142E-05	0.0001
U-238	8.725E-03	0.0569	3.600E-04	0.0023	0.000E+00	0.0000	1.983E-04	0.0013	1.683E-06	0.0000	2.723E-06	0.0000	1.144E-05	0.0001
Total	1.228E-01	0.8005	6.746E-03	0.0440	0.000E+00	0.0000	2.313E-02	0.1508	3.912E-05	0.0003	1.378E-05	0.0001	6.794E-04	0.0044

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.050E-03	0.0329
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.473E-02	0.5523
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.185E-03	0.0142
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.178E-03	0.0142
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.711E-03	0.0177
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.543E-04	0.0043
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.662E-02	0.3038
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.299E-03	0.0606
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.534E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.794E-03	0.0183	1.332E-03	0.0087	0.000E+00	0.0000	7.141E-04	0.0047	8.062E-07	0.0000	1.148E-07	0.0000	1.524E-04	0.0010
Np-237	6.488E-02	0.4242	1.636E-03	0.0107	0.000E+00	0.0000	1.761E-02	0.1151	2.969E-05	0.0002	9.719E-07	0.0000	1.880E-04	0.0012
Pu-239	1.827E-05	0.0001	1.308E-03	0.0086	0.000E+00	0.0000	7.059E-04	0.0046	1.594E-06	0.0000	5.620E-08	0.0000	1.507E-04	0.0010
Pu-240	1.099E-05	0.0001	1.307E-03	0.0085	0.000E+00	0.0000	7.054E-04	0.0046	1.593E-06	0.0000	5.615E-08	0.0000	1.506E-04	0.0010
Tc-99	7.770E-06	0.0001	2.534E-08	0.0000	0.000E+00	0.0000	2.696E-03	0.0176	1.571E-07	0.0000	4.273E-06	0.0000	6.208E-08	0.0000
U-234	2.624E-05	0.0002	4.025E-04	0.0026	0.000E+00	0.0000	2.088E-04	0.0014	1.772E-06	0.0000	2.866E-06	0.0000	1.205E-05	0.0001
U-235	4.601E-02	0.3008	3.765E-04	0.0025	0.000E+00	0.0000	2.020E-04	0.0013	1.674E-06	0.0000	2.708E-06	0.0000	1.150E-05	0.0001
U-238	8.721E-03	0.0570	3.599E-04	0.0024	0.000E+00	0.0000	1.982E-04	0.0013	1.683E-06	0.0000	2.721E-06	0.0000	1.144E-05	0.0001
Total	1.225E-01	0.8007	6.722E-03	0.0439	0.000E+00	0.0000	2.304E-02	0.1506	3.897E-05	0.0003	1.377E-05	0.0001	6.767E-04	0.0044

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.994E-03	0.0326
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.434E-02	0.5514
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.185E-03	0.0143
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.176E-03	0.0142
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.708E-03	0.0177
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.542E-04	0.0043
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.660E-02	0.3047
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.295E-03	0.0608
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.530E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.706E-03	0.0178	1.290E-03	0.0085	0.000E+00	0.0000	6.917E-04	0.0046	7.809E-07	0.0000	1.112E-07	0.0000	1.476E-04	0.0010
Np-237	6.403E-02	0.4222	1.615E-03	0.0106	0.000E+00	0.0000	1.738E-02	0.1146	2.931E-05	0.0002	9.595E-07	0.0000	1.855E-04	0.0012
Pu-239	1.825E-05	0.0001	1.307E-03	0.0086	0.000E+00	0.0000	7.053E-04	0.0047	1.593E-06	0.0000	5.615E-08	0.0000	1.506E-04	0.0010
Pu-240	1.096E-05	0.0001	1.304E-03	0.0086	0.000E+00	0.0000	7.037E-04	0.0046	1.589E-06	0.0000	5.602E-08	0.0000	1.502E-04	0.0010
Tc-99	7.745E-06	0.0001	2.526E-08	0.0000	0.000E+00	0.0000	2.687E-03	0.0177	1.566E-07	0.0000	4.260E-06	0.0000	6.188E-08	0.0000
U-234	2.721E-05	0.0002	4.021E-04	0.0027	0.000E+00	0.0000	2.085E-04	0.0014	1.770E-06	0.0000	2.862E-06	0.0000	1.203E-05	0.0001
U-235	4.598E-02	0.3032	3.818E-04	0.0025	0.000E+00	0.0000	2.113E-04	0.0014	1.673E-06	0.0000	2.705E-06	0.0000	1.180E-05	0.0001
U-238	8.709E-03	0.0574	3.594E-04	0.0024	0.000E+00	0.0000	1.980E-04	0.0013	1.681E-06	0.0000	2.718E-06	0.0000	1.142E-05	0.0001
Total	1.215E-01	0.8011	6.659E-03	0.0439	0.000E+00	0.0000	2.279E-02	0.1502	3.855E-05	0.0003	1.373E-05	0.0001	6.692E-04	0.0044

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.836E-03	0.0319
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.325E-02	0.5489
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.183E-03	0.0144
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.170E-03	0.0143
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.699E-03	0.0178
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.545E-04	0.0043
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.659E-02	0.3072
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.282E-03	0.0612
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.517E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.420E-03	0.0164	1.153E-03	0.0078	0.000E+00	0.0000	6.185E-04	0.0042	6.985E-07	0.0000	9.941E-08	0.0000	1.319E-04	0.0009
Np-237	6.117E-02	0.4151	1.543E-03	0.0105	0.000E+00	0.0000	1.660E-02	0.1127	2.800E-05	0.0002	9.175E-07	0.0000	1.772E-04	0.0012
Pu-239	1.820E-05	0.0001	1.303E-03	0.0088	0.000E+00	0.0000	7.032E-04	0.0048	1.588E-06	0.0000	5.598E-08	0.0000	1.501E-04	0.0010
Pu-240	1.087E-05	0.0001	1.293E-03	0.0088	0.000E+00	0.0000	6.978E-04	0.0047	1.576E-06	0.0000	5.556E-08	0.0000	1.490E-04	0.0010
Tc-99	7.660E-06	0.0001	2.498E-08	0.0000	0.000E+00	0.0000	2.657E-03	0.0180	1.549E-07	0.0000	4.213E-06	0.0000	6.120E-08	0.0000
U-234	3.808E-05	0.0003	4.008E-04	0.0027	0.000E+00	0.0000	2.080E-04	0.0014	1.762E-06	0.0000	2.850E-06	0.0000	1.199E-05	0.0001
U-235	4.593E-02	0.3117	4.114E-04	0.0028	0.000E+00	0.0000	2.452E-04	0.0017	1.667E-06	0.0000	2.694E-06	0.0000	1.320E-05	0.0001
U-238	8.668E-03	0.0588	3.578E-04	0.0024	0.000E+00	0.0000	1.971E-04	0.0013	1.673E-06	0.0000	2.706E-06	0.0000	1.137E-05	0.0001
Total	1.183E-01	0.8026	6.462E-03	0.0439	0.000E+00	0.0000	2.193E-02	0.1488	3.712E-05	0.0003	1.359E-05	0.0001	6.448E-04	0.0044

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.324E-03	0.0293
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.952E-02	0.5397
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.176E-03	0.0148
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.152E-03	0.0146
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.670E-03	0.0181
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.634E-04	0.0045
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.660E-02	0.3163
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.239E-03	0.0627
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.474E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.758E-03	0.0129	8.362E-04	0.0061	0.000E+00	0.0000	4.495E-04	0.0033	5.081E-07	0.0000	7.215E-08	0.0000	9.570E-05	0.0007
Np-237	5.368E-02	0.3936	1.354E-03	0.0099	0.000E+00	0.0000	1.457E-02	0.1068	2.457E-05	0.0002	8.075E-07	0.0000	1.555E-04	0.0011
Pu-239	1.806E-05	0.0001	1.292E-03	0.0095	0.000E+00	0.0000	6.973E-04	0.0051	1.574E-06	0.0000	5.551E-08	0.0000	1.488E-04	0.0011
Pu-240	1.061E-05	0.0001	1.263E-03	0.0093	0.000E+00	0.0000	6.813E-04	0.0050	1.538E-06	0.0000	5.426E-08	0.0000	1.454E-04	0.0011
Tc-99	7.421E-06	0.0001	2.420E-08	0.0000	0.000E+00	0.0000	2.575E-03	0.0189	1.501E-07	0.0000	4.081E-06	0.0000	5.929E-08	0.0000
U-234	1.301E-04	0.0010	3.970E-04	0.0029	0.000E+00	0.0000	2.089E-04	0.0015	1.744E-06	0.0000	2.822E-06	0.0000	1.192E-05	0.0001
U-235	4.586E-02	0.3363	5.074E-04	0.0037	0.000E+00	0.0000	3.427E-04	0.0025	1.651E-06	0.0000	2.664E-06	0.0000	1.753E-05	0.0001
U-238	8.553E-03	0.0627	3.533E-04	0.0026	0.000E+00	0.0000	1.946E-04	0.0014	1.652E-06	0.0000	2.671E-06	0.0000	1.123E-05	0.0001
Total	1.100E-01	0.8067	6.003E-03	0.0440	0.000E+00	0.0000	1.972E-02	0.1446	3.339E-05	0.0002	1.323E-05	0.0001	5.862E-04	0.0043

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.140E-03	0.0230
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.978E-02	0.5117
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.158E-03	0.0158
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.101E-03	0.0154
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.586E-03	0.0190
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.525E-04	0.0055
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.673E-02	0.3427
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.117E-03	0.0669
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.364E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	5.771E-04	0.0049	2.719E-04	0.0023	0.000E+00	0.0000	1.476E-04	0.0012	1.677E-07	0.0000	2.353E-08	0.0000	3.111E-05	0.0003
Np-237	3.399E-02	0.2865	8.591E-04	0.0072	0.000E+00	0.0000	9.222E-03	0.0777	1.555E-05	0.0001	5.180E-07	0.0000	9.849E-05	0.0008
Pu-239	1.756E-05	0.0001	1.254E-03	0.0106	0.000E+00	0.0000	6.768E-04	0.0057	1.528E-06	0.0000	5.388E-08	0.0000	1.445E-04	0.0012
Pu-240	9.759E-06	0.0001	1.161E-03	0.0098	0.000E+00	0.0000	6.265E-04	0.0053	1.415E-06	0.0000	4.995E-08	0.0000	1.337E-04	0.0011
Tc-99	6.642E-06	0.0001	2.166E-08	0.0000	0.000E+00	0.0000	2.305E-03	0.0194	1.343E-07	0.0000	3.653E-06	0.0000	5.307E-08	0.0000
U-234	1.055E-03	0.0089	3.843E-04	0.0032	0.000E+00	0.0000	2.372E-04	0.0020	1.729E-06	0.0000	2.818E-06	0.0000	1.202E-05	0.0001
U-235	4.561E-02	0.3844	8.307E-04	0.0070	0.000E+00	0.0000	6.693E-04	0.0056	1.599E-06	0.0000	2.563E-06	0.0000	3.207E-05	0.0003
U-238	8.163E-03	0.0688	3.379E-04	0.0028	0.000E+00	0.0000	1.861E-04	0.0016	1.580E-06	0.0000	2.555E-06	0.0000	1.074E-05	0.0001
Total	8.943E-02	0.7538	5.099E-03	0.0430	0.000E+00	0.0000	1.407E-02	0.1186	2.371E-05	0.0002	1.223E-05	0.0001	4.627E-04	0.0039

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.224E-06	0.0000	4.659E-08	0.0000	0.000E+00	0.0000	1.699E-10	0.0000	1.260E-12	0.0000	1.058E-13	0.0000	1.029E-03	0.0087
Np-237	9.192E-03	0.0775	3.499E-04	0.0029	0.000E+00	0.0000	1.276E-06	0.0000	9.466E-09	0.0000	7.955E-10	0.0000	5.373E-02	0.4529
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.095E-03	0.0177
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.932E-03	0.0163
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.315E-03	0.0195
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.693E-03	0.0143
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.715E-02	0.3974
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.702E-03	0.0733
Total	9.193E-03	0.0775	3.500E-04	0.0029	0.000E+00	0.0000	1.276E-06	0.0000	9.467E-09	0.0000	7.956E-10	0.0000	1.186E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	5.074E-03	5.066E-03	5.050E-03	4.993E-03	4.836E-03	4.321E-03	3.134E-03	1.019E-03
Am-241	Np-237+D	1.000E+00	1.358E-08	4.101E-08	9.571E-08	2.852E-07	8.104E-07	2.468E-06	5.907E-06	1.050E-05
Am-241	U-233	1.000E+00	1.919E-16	1.265E-15	6.490E-15	5.685E-14	4.695E-13	4.821E-12	3.702E-11	2.697E-10
Am-241	Th-229+D	1.000E+00	5.664E-19	8.473E-18	9.866E-17	2.604E-15	6.293E-14	2.158E-12	5.125E-11	1.279E-09
Am-241	ΣDSR (j)		5.074E-03	5.066E-03	5.050E-03	4.994E-03	4.836E-03	4.324E-03	3.140E-03	1.029E-03
Np-237+D	Np-237+D	1.000E+00	8.489E-02	8.484E-02	8.473E-02	8.434E-02	8.325E-02	7.952E-02	6.978E-02	5.371E-02
Np-237+D	U-233	1.000E+00	1.715E-09	4.906E-09	1.126E-08	3.342E-08	9.612E-08	3.085E-07	8.588E-07	2.548E-06
Np-237+D	Th-229+D	1.000E+00	6.989E-12	4.884E-11	2.578E-10	2.302E-09	1.930E-08	2.056E-07	1.742E-06	1.607E-05
Np-237+D	ΣDSR (j)		8.489E-02	8.484E-02	8.473E-02	8.434E-02	8.325E-02	7.952E-02	6.978E-02	5.373E-02
Pu-239	Pu-239	1.000E+00	2.186E-03	2.186E-03	2.185E-03	2.185E-03	2.183E-03	2.176E-03	2.158E-03	2.095E-03
Pu-239	U-235+D	1.000E+00	2.295E-11	6.887E-11	1.607E-10	4.819E-10	1.398E-09	4.590E-09	1.357E-08	4.350E-08
Pu-239	Pa-231	1.000E+00	1.232E-16	8.799E-16	4.690E-15	4.213E-14	3.554E-13	3.848E-12	3.409E-11	3.658E-10
Pu-239	Ac-227+D	1.000E+00	4.022E-18	5.927E-17	6.771E-16	1.696E-14	3.584E-13	8.445E-12	1.081E-10	1.341E-09
Pu-239	ΣDSR (j)		2.186E-03	2.186E-03	2.185E-03	2.185E-03	2.183E-03	2.176E-03	2.158E-03	2.095E-03
Pu-240	Pu-240	4.950E-08	1.078E-10	1.078E-10	1.078E-10	1.077E-10	1.074E-10	1.065E-10	1.040E-10	9.566E-11
Pu-240	Pu-240	1.000E+00	2.178E-03	2.178E-03	2.178E-03	2.176E-03	2.170E-03	2.152E-03	2.101E-03	1.932E-03
Pu-240	U-236	1.000E+00	8.904E-12	2.696E-11	6.309E-11	1.894E-10	5.495E-10	1.799E-09	5.281E-09	1.647E-08
Pu-240	Th-232	1.000E+00	1.420E-21	9.808E-21	5.153E-20	4.593E-19	3.864E-18	4.175E-17	3.686E-16	3.913E-15
Pu-240	Ra-228+D	1.000E+00	2.537E-21	3.726E-20	4.121E-19	9.091E-18	1.453E-16	2.220E-15	2.187E-14	2.413E-13
Pu-240	Th-228+D	1.000E+00	2.768E-22	7.897E-21	1.681E-19	7.692E-18	1.838E-16	3.289E-15	3.372E-14	3.770E-13
Pu-240	ΣDSR (j)		2.178E-03	2.178E-03	2.178E-03	2.176E-03	2.170E-03	2.152E-03	2.101E-03	1.932E-03
Tc-99	Tc-99	1.000E+00	2.712E-03	2.712E-03	2.711E-03	2.708E-03	2.699E-03	2.670E-03	2.586E-03	2.315E-03
U-234	U-234	1.000E+00	6.544E-04	6.543E-04	6.543E-04	6.539E-04	6.530E-04	6.498E-04	6.408E-04	6.103E-04
U-234	Th-230	1.000E+00	5.494E-09	1.633E-08	3.798E-08	1.137E-07	3.299E-07	1.084E-06	3.215E-06	1.041E-05
U-234	Ra-226+D	1.000E+00	4.166E-10	2.921E-09	1.544E-08	1.380E-07	1.160E-06	1.245E-05	1.076E-04	1.062E-03
U-234	Pb-210+D	1.000E+00	9.315E-14	9.444E-13	8.137E-12	1.654E-10	3.221E-09	7.350E-08	9.177E-07	1.048E-05
U-234	ΣDSR (j)		6.544E-04	6.544E-04	6.543E-04	6.542E-04	6.545E-04	6.634E-04	7.525E-04	1.693E-03
U-235+D	U-235+D	1.000E+00	4.662E-02	4.662E-02	4.661E-02	4.659E-02	4.653E-02	4.631E-02	4.570E-02	4.361E-02
U-235+D	Pa-231	1.000E+00	3.804E-07	1.157E-06	2.712E-06	8.150E-06	2.367E-05	7.775E-05	2.302E-04	7.410E-04
U-235+D	Ac-227+D	1.000E+00	1.623E-08	1.115E-07	5.753E-07	4.780E-06	3.327E-05	2.124E-04	8.047E-04	2.801E-03
U-235+D	ΣDSR (j)		4.662E-02	4.662E-02	4.662E-02	4.660E-02	4.659E-02	4.660E-02	4.673E-02	4.715E-02
U-238	U-238	5.400E-05	3.084E-08	3.084E-08	3.084E-08	3.082E-08	3.078E-08	3.064E-08	3.023E-08	2.885E-08
U-238+D	U-238+D	9.999E-01	9.301E-03	9.300E-03	9.299E-03	9.294E-03	9.282E-03	9.239E-03	9.116E-03	8.699E-03
U-238+D	U-234	9.999E-01	9.275E-10	2.782E-09	6.491E-09	1.946E-08	5.646E-08	1.852E-07	5.461E-07	1.733E-06
U-238+D	Th-230	9.999E-01	5.237E-15	3.618E-14	1.901E-13	1.695E-12	1.426E-11	1.543E-10	1.366E-09	1.463E-08
U-238+D	Ra-226+D	9.999E-01	2.950E-16	4.433E-15	5.176E-14	1.372E-12	3.347E-11	1.185E-09	3.078E-08	1.029E-06
U-238+D	Pb-210+D	9.999E-01	5.978E-20	1.248E-18	2.258E-17	1.305E-15	7.389E-14	5.899E-12	2.405E-10	9.847E-09
U-238+D	ΣDSR (j)		9.301E-03	9.300E-03	9.299E-03	9.295E-03	9.282E-03	9.239E-03	9.116E-03	8.702E-03

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 3 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		4.927E+03	4.935E+03	4.951E+03	5.006E+03	5.169E+03	5.782E+03	7.961E+03	2.429E+04
Np-237		2.945E+02	2.947E+02	2.951E+02	2.964E+02	3.003E+02	3.144E+02	3.582E+02	4.653E+02
Pu-239		1.144E+04	1.144E+04	1.144E+04	1.144E+04	1.145E+04	1.149E+04	1.158E+04	1.193E+04
Pu-240		1.148E+04	1.148E+04	1.148E+04	1.149E+04	1.152E+04	1.162E+04	1.190E+04	1.294E+04
Tc-99		9.218E+03	9.219E+03	9.222E+03	9.232E+03	9.262E+03	9.365E+03	9.666E+03	1.080E+04
U-234		3.820E+04	3.821E+04	3.821E+04	3.822E+04	3.820E+04	3.768E+04	3.322E+04	1.477E+04
U-235		5.362E+02	5.362E+02	5.363E+02	5.364E+02	5.366E+02	5.365E+02	5.350E+02	5.302E+02
U-238		2.688E+03	2.688E+03	2.688E+03	2.690E+03	2.693E+03	2.706E+03	2.742E+03	2.873E+03

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	5.074E-03	4.927E+03	5.074E-03	4.927E+03
Np-237	1.000E+00	0.000E+00	8.489E-02	2.945E+02	8.489E-02	2.945E+02
Pu-239	1.000E+00	0.000E+00	2.186E-03	1.144E+04	2.186E-03	1.144E+04
Pu-240	1.000E+00	0.000E+00	2.178E-03	1.148E+04	2.178E-03	1.148E+04
Tc-99	1.000E+00	0.000E+00	2.712E-03	9.218E+03	2.712E-03	9.218E+03
U-234	1.000E+00	1.000E+03	1.693E-03	1.477E+04	6.544E-04	3.820E+04
U-235	1.000E+00	1.000E+03	4.715E-02	5.302E+02	4.662E-02	5.362E+02
U-238	1.000E+00	0.000E+00	9.301E-03	2.688E+03	9.301E-03	2.688E+03

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	5.074E-03	5.066E-03	5.050E-03	4.993E-03	4.836E-03	4.321E-03	3.134E-03	1.019E-03
Np-237	Am-241	1.000E+00	1.358E-08	4.101E-08	9.571E-08	2.852E-07	8.104E-07	2.468E-06	5.907E-06	1.050E-05
Np-237	Np-237	1.000E+00	8.489E-02	8.484E-02	8.473E-02	8.434E-02	8.325E-02	7.952E-02	6.978E-02	5.371E-02
Np-237	ΣDOSE (j)		8.489E-02	8.484E-02	8.473E-02	8.434E-02	8.325E-02	7.953E-02	6.979E-02	5.372E-02
U-233	Am-241	1.000E+00	1.919E-16	1.265E-15	6.490E-15	5.685E-14	4.695E-13	4.821E-12	3.702E-11	2.697E-10
U-233	Np-237	1.000E+00	1.715E-09	4.906E-09	1.126E-08	3.342E-08	9.612E-08	3.085E-07	8.588E-07	2.548E-06
U-233	ΣDOSE (j)		1.715E-09	4.906E-09	1.126E-08	3.342E-08	9.613E-08	3.086E-07	8.588E-07	2.548E-06
Th-229	Am-241	1.000E+00	5.664E-19	8.473E-18	9.866E-17	2.604E-15	6.293E-14	2.158E-12	5.125E-11	1.279E-09
Th-229	Np-237	1.000E+00	6.989E-12	4.884E-11	2.578E-10	2.302E-09	1.930E-08	2.056E-07	1.742E-06	1.607E-05
Th-229	ΣDOSE (j)		6.989E-12	4.884E-11	2.578E-10	2.302E-09	1.930E-08	2.056E-07	1.742E-06	1.608E-05
Pu-239	Pu-239	1.000E+00	2.186E-03	2.186E-03	2.185E-03	2.185E-03	2.183E-03	2.176E-03	2.158E-03	2.095E-03
U-235	Pu-239	1.000E+00	2.295E-11	6.887E-11	1.607E-10	4.819E-10	1.398E-09	4.590E-09	1.357E-08	4.350E-08
U-235	U-235	1.000E+00	4.662E-02	4.662E-02	4.661E-02	4.659E-02	4.653E-02	4.631E-02	4.570E-02	4.361E-02
U-235	ΣDOSE (j)		4.662E-02	4.662E-02	4.661E-02	4.659E-02	4.653E-02	4.631E-02	4.570E-02	4.361E-02
Pa-231	Pu-239	1.000E+00	1.232E-16	8.799E-16	4.690E-15	4.213E-14	3.554E-13	3.848E-12	3.409E-11	3.658E-10
Pa-231	U-235	1.000E+00	3.804E-07	1.157E-06	2.712E-06	8.150E-06	2.367E-05	7.775E-05	2.302E-04	7.410E-04
Pa-231	ΣDOSE (j)		3.804E-07	1.157E-06	2.712E-06	8.150E-06	2.367E-05	7.775E-05	2.302E-04	7.410E-04
Ac-227	Pu-239	1.000E+00	4.022E-18	5.927E-17	6.771E-16	1.696E-14	3.584E-13	8.445E-12	1.081E-10	1.341E-09
Ac-227	U-235	1.000E+00	1.623E-08	1.115E-07	5.753E-07	4.780E-06	3.327E-05	2.124E-04	8.047E-04	2.801E-03
Ac-227	ΣDOSE (j)		1.623E-08	1.115E-07	5.753E-07	4.780E-06	3.327E-05	2.124E-04	8.047E-04	2.801E-03
Pu-240	Pu-240	4.950E-08	1.078E-10	1.078E-10	1.078E-10	1.077E-10	1.074E-10	1.065E-10	1.040E-10	9.566E-11
Pu-240	Pu-240	1.000E+00	2.178E-03	2.178E-03	2.178E-03	2.176E-03	2.170E-03	2.152E-03	2.101E-03	1.932E-03
Pu-240	ΣDOSE (j)		2.178E-03	2.178E-03	2.178E-03	2.176E-03	2.170E-03	2.152E-03	2.101E-03	1.932E-03
U-236	Pu-240	1.000E+00	8.904E-12	2.696E-11	6.309E-11	1.894E-10	5.495E-10	1.799E-09	5.281E-09	1.647E-08
Th-232	Pu-240	1.000E+00	1.420E-21	9.808E-21	5.153E-20	4.593E-19	3.864E-18	4.175E-17	3.686E-16	3.913E-15
Ra-228	Pu-240	1.000E+00	2.537E-21	3.726E-20	4.121E-19	9.091E-18	1.453E-16	2.220E-15	2.187E-14	2.413E-13
Th-228	Pu-240	1.000E+00	2.768E-22	7.897E-21	1.681E-19	7.692E-18	1.838E-16	3.289E-15	3.372E-14	3.770E-13
Tc-99	Tc-99	1.000E+00	2.712E-03	2.712E-03	2.711E-03	2.708E-03	2.699E-03	2.670E-03	2.586E-03	2.315E-03
U-234	U-234	1.000E+00	6.544E-04	6.543E-04	6.543E-04	6.539E-04	6.530E-04	6.498E-04	6.408E-04	6.103E-04
U-234	U-238	9.999E-01	9.275E-10	2.782E-09	6.491E-09	1.946E-08	5.646E-08	1.852E-07	5.461E-07	1.733E-06
U-234	ΣDOSE (j)		6.544E-04	6.543E-04	6.543E-04	6.540E-04	6.531E-04	6.500E-04	6.414E-04	6.120E-04
Th-230	U-234	1.000E+00	5.494E-09	1.633E-08	3.798E-08	1.137E-07	3.299E-07	1.084E-06	3.215E-06	1.041E-05
Th-230	U-238	9.999E-01	5.237E-15	3.618E-14	1.901E-13	1.695E-12	1.426E-11	1.543E-10	1.366E-09	1.463E-08
Th-230	ΣDOSE (j)		5.494E-09	1.633E-08	3.798E-08	1.137E-07	3.299E-07	1.084E-06	3.216E-06	1.043E-05

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	4.166E-10	2.921E-09	1.544E-08	1.380E-07	1.160E-06	1.245E-05	1.076E-04	1.062E-03
Ra-226	U-238	9.999E-01	2.950E-16	4.433E-15	5.176E-14	1.372E-12	3.347E-11	1.185E-09	3.078E-08	1.029E-06
Ra-226	ΣDOSE(j)		4.166E-10	2.921E-09	1.544E-08	1.380E-07	1.160E-06	1.245E-05	1.076E-04	1.063E-03
Pb-210	U-234	1.000E+00	9.315E-14	9.444E-13	8.137E-12	1.654E-10	3.221E-09	7.350E-08	9.177E-07	1.048E-05
Pb-210	U-238	9.999E-01	5.978E-20	1.248E-18	2.258E-17	1.305E-15	7.389E-14	5.899E-12	2.405E-10	9.847E-09
Pb-210	ΣDOSE(j)		9.315E-14	9.444E-13	8.137E-12	1.654E-10	3.221E-09	7.350E-08	9.179E-07	1.049E-05
U-238	U-238	5.400E-05	3.084E-08	3.084E-08	3.084E-08	3.082E-08	3.078E-08	3.064E-08	3.023E-08	2.885E-08
U-238	U-238	9.999E-01	9.301E-03	9.300E-03	9.299E-03	9.294E-03	9.282E-03	9.239E-03	9.116E-03	8.699E-03
U-238	ΣDOSE(j)		9.301E-03	9.300E-03	9.299E-03	9.295E-03	9.282E-03	9.239E-03	9.116E-03	8.699E-03

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 3 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.22 seconds

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Summary : Hematite - Uniform CSM - AF 30 m²

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Uniform CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Uniform CSM - AF 30 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

Summary : Hematite - Uniform CSM - AF 30 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

Summary : Hematite - Uniform CSM - AF 30 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Uniform CSM - AF 30 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Uniform CSM - AF 30 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.921E-01	5.919E-01	5.913E-01	5.894E-01	5.840E-01	5.659E-01	5.195E-01	4.986E-01
M(t):	2.369E-02	2.367E-02	2.365E-02	2.358E-02	2.336E-02	2.264E-02	2.078E-02	1.994E-02

Maximum TDOSE(t): 5.921E-01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.587E-03	0.0128	1.751E-03	0.0030	0.000E+00	0.0000	7.256E-03	0.0123	8.192E-06	0.0000	1.167E-06	0.0000	1.549E-03	0.0026
Np-237	1.832E-01	0.3094	2.130E-03	0.0036	0.000E+00	0.0000	1.772E-01	0.2993	2.989E-04	0.0005	9.781E-06	0.0000	1.892E-03	0.0032
Pu-239	5.046E-05	0.0001	1.693E-03	0.0029	0.000E+00	0.0000	7.062E-03	0.0119	1.595E-05	0.0000	5.622E-07	0.0000	1.508E-03	0.0025
Pu-240	2.820E-05	0.0000	1.693E-03	0.0029	0.000E+00	0.0000	7.062E-03	0.0119	1.595E-05	0.0000	5.622E-07	0.0000	1.508E-03	0.0025
Tc-99	2.153E-05	0.0000	3.283E-08	0.0000	0.000E+00	0.0000	2.700E-02	0.0456	1.574E-06	0.0000	4.280E-05	0.0001	6.217E-07	0.0000
U-234	7.066E-05	0.0001	5.209E-04	0.0009	0.000E+00	0.0000	2.089E-03	0.0035	1.773E-05	0.0000	2.868E-05	0.0000	1.205E-04	0.0002
U-235	1.287E-01	0.2174	4.854E-04	0.0008	0.000E+00	0.0000	1.976E-03	0.0033	1.675E-05	0.0000	2.709E-05	0.0000	1.139E-04	0.0002
U-238	2.475E-02	0.0418	4.658E-04	0.0008	0.000E+00	0.0000	1.983E-03	0.0033	1.684E-05	0.0000	2.723E-05	0.0000	1.144E-04	0.0002
Total	3.444E-01	0.5816	8.739E-03	0.0148	0.000E+00	0.0000	2.317E-01	0.3912	3.918E-04	0.0007	1.379E-04	0.0002	6.805E-03	0.0115

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.815E-02	0.0307
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.648E-01	0.6160
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E-02	0.0174
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.031E-02	0.0174
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.707E-02	0.0457
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.847E-03	0.0048
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.313E-01	0.2218
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.736E-02	0.0462
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.921E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.575E-03	0.0128	1.748E-03	0.0030	0.000E+00	0.0000	7.245E-03	0.0122	8.179E-06	0.0000	1.165E-06	0.0000	1.546E-03	0.0026
Np-237	1.831E-01	0.3093	2.129E-03	0.0036	0.000E+00	0.0000	1.771E-01	0.2993	2.987E-04	0.0005	9.775E-06	0.0000	1.891E-03	0.0032
Pu-239	5.046E-05	0.0001	1.693E-03	0.0029	0.000E+00	0.0000	7.062E-03	0.0119	1.595E-05	0.0000	5.622E-07	0.0000	1.508E-03	0.0025
Pu-240	2.820E-05	0.0000	1.693E-03	0.0029	0.000E+00	0.0000	7.061E-03	0.0119	1.594E-05	0.0000	5.621E-07	0.0000	1.507E-03	0.0025
Tc-99	2.152E-05	0.0000	3.283E-08	0.0000	0.000E+00	0.0000	2.699E-02	0.0456	1.574E-06	0.0000	4.279E-05	0.0001	6.216E-07	0.0000
U-234	7.066E-05	0.0001	5.209E-04	0.0009	0.000E+00	0.0000	2.089E-03	0.0035	1.773E-05	0.0000	2.868E-05	0.0000	1.205E-04	0.0002
U-235	1.287E-01	0.2174	4.855E-04	0.0008	0.000E+00	0.0000	1.980E-03	0.0033	1.675E-05	0.0000	2.709E-05	0.0000	1.140E-04	0.0002
U-238	2.475E-02	0.0418	4.658E-04	0.0008	0.000E+00	0.0000	1.983E-03	0.0034	1.684E-05	0.0000	2.723E-05	0.0000	1.144E-04	0.0002
Total	3.443E-01	0.5816	8.735E-03	0.0148	0.000E+00	0.0000	2.315E-01	0.3912	3.916E-04	0.0007	1.379E-04	0.0002	6.801E-03	0.0115

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.812E-02	0.0306
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.645E-01	0.6159
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E-02	0.0175
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.031E-02	0.0174
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.706E-02	0.0457
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.847E-03	0.0048
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.313E-01	0.2219
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.736E-02	0.0462
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.919E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.551E-03	0.0128	1.742E-03	0.0029	0.000E+00	0.0000	7.222E-03	0.0122	8.153E-06	0.0000	1.161E-06	0.0000	1.542E-03	0.0026
Np-237	1.828E-01	0.3092	2.126E-03	0.0036	0.000E+00	0.0000	1.769E-01	0.2992	2.983E-04	0.0005	9.763E-06	0.0000	1.888E-03	0.0032
Pu-239	5.045E-05	0.0001	1.693E-03	0.0029	0.000E+00	0.0000	7.062E-03	0.0119	1.594E-05	0.0000	5.621E-07	0.0000	1.507E-03	0.0025
Pu-240	2.819E-05	0.0000	1.692E-03	0.0029	0.000E+00	0.0000	7.060E-03	0.0119	1.594E-05	0.0000	5.620E-07	0.0000	1.507E-03	0.0025
Tc-99	2.152E-05	0.0000	3.281E-08	0.0000	0.000E+00	0.0000	2.699E-02	0.0456	1.573E-06	0.0000	4.278E-05	0.0001	6.214E-07	0.0000
U-234	7.069E-05	0.0001	5.208E-04	0.0009	0.000E+00	0.0000	2.089E-03	0.0035	1.773E-05	0.0000	2.867E-05	0.0000	1.205E-04	0.0002
U-235	1.287E-01	0.2176	4.858E-04	0.0008	0.000E+00	0.0000	1.989E-03	0.0034	1.675E-05	0.0000	2.709E-05	0.0000	1.142E-04	0.0002
U-238	2.474E-02	0.0418	4.657E-04	0.0008	0.000E+00	0.0000	1.983E-03	0.0034	1.683E-05	0.0000	2.723E-05	0.0000	1.144E-04	0.0002
Total	3.440E-01	0.5817	8.726E-03	0.0148	0.000E+00	0.0000	2.313E-01	0.3911	3.912E-04	0.0007	1.378E-04	0.0002	6.794E-03	0.0115

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.807E-02	0.0306
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.640E-01	0.6157
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E-02	0.0175
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.030E-02	0.0174
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.705E-02	0.0457
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.847E-03	0.0048
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.313E-01	0.2221
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.735E-02	0.0463
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.913E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.467E-03	0.0127	1.723E-03	0.0029	0.000E+00	0.0000	7.141E-03	0.0121	8.062E-06	0.0000	1.148E-06	0.0000	1.524E-03	0.0026
Np-237	1.820E-01	0.3088	2.116E-03	0.0036	0.000E+00	0.0000	1.761E-01	0.2988	2.969E-04	0.0005	9.719E-06	0.0000	1.880E-03	0.0032
Pu-239	5.044E-05	0.0001	1.692E-03	0.0029	0.000E+00	0.0000	7.059E-03	0.0120	1.594E-05	0.0000	5.620E-07	0.0000	1.507E-03	0.0026
Pu-240	2.817E-05	0.0000	1.691E-03	0.0029	0.000E+00	0.0000	7.054E-03	0.0120	1.593E-05	0.0000	5.615E-07	0.0000	1.506E-03	0.0026
Tc-99	2.149E-05	0.0000	3.278E-08	0.0000	0.000E+00	0.0000	2.696E-02	0.0457	1.571E-06	0.0000	4.273E-05	0.0001	6.208E-07	0.0000
U-234	7.102E-05	0.0001	5.207E-04	0.0009	0.000E+00	0.0000	2.088E-03	0.0035	1.772E-05	0.0000	2.866E-05	0.0000	1.205E-04	0.0002
U-235	1.286E-01	0.2183	4.871E-04	0.0008	0.000E+00	0.0000	2.020E-03	0.0034	1.674E-05	0.0000	2.708E-05	0.0000	1.150E-04	0.0002
U-238	2.473E-02	0.0420	4.655E-04	0.0008	0.000E+00	0.0000	1.982E-03	0.0034	1.683E-05	0.0000	2.721E-05	0.0000	1.144E-04	0.0002
Total	3.430E-01	0.5820	8.696E-03	0.0148	0.000E+00	0.0000	2.304E-01	0.3909	3.897E-04	0.0007	1.377E-04	0.0002	6.767E-03	0.0115

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.786E-02	0.0303
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.624E-01	0.6149
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E-02	0.0175
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.029E-02	0.0175
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.702E-02	0.0458
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.846E-03	0.0048
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.313E-01	0.2228
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.734E-02	0.0464
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.894E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.232E-03	0.0124	1.668E-03	0.0029	0.000E+00	0.0000	6.917E-03	0.0118	7.809E-06	0.0000	1.112E-06	0.0000	1.476E-03	0.0025
Np-237	1.796E-01	0.3076	2.089E-03	0.0036	0.000E+00	0.0000	1.738E-01	0.2976	2.931E-04	0.0005	9.595E-06	0.0000	1.855E-03	0.0032
Pu-239	5.040E-05	0.0001	1.691E-03	0.0029	0.000E+00	0.0000	7.053E-03	0.0121	1.593E-05	0.0000	5.615E-07	0.0000	1.506E-03	0.0026
Pu-240	2.810E-05	0.0000	1.687E-03	0.0029	0.000E+00	0.0000	7.037E-03	0.0120	1.589E-05	0.0000	5.602E-07	0.0000	1.502E-03	0.0026
Tc-99	2.142E-05	0.0000	3.268E-08	0.0000	0.000E+00	0.0000	2.687E-02	0.0460	1.566E-06	0.0000	4.260E-05	0.0001	6.188E-07	0.0000
U-234	7.382E-05	0.0001	5.202E-04	0.0009	0.000E+00	0.0000	2.085E-03	0.0036	1.770E-05	0.0000	2.862E-05	0.0000	1.203E-04	0.0002
U-235	1.285E-01	0.2201	4.938E-04	0.0008	0.000E+00	0.0000	2.113E-03	0.0036	1.673E-05	0.0000	2.705E-05	0.0000	1.180E-04	0.0002
U-238	2.470E-02	0.0423	4.649E-04	0.0008	0.000E+00	0.0000	1.980E-03	0.0034	1.681E-05	0.0000	2.718E-05	0.0000	1.142E-04	0.0002
Total	3.403E-01	0.5827	8.614E-03	0.0148	0.000E+00	0.0000	2.279E-01	0.3902	3.855E-04	0.0007	1.373E-04	0.0002	6.692E-03	0.0115

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.730E-02	0.0296
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.577E-01	0.6125
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.032E-02	0.0177
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.027E-02	0.0176
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.694E-02	0.0461
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.846E-03	0.0049
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.313E-01	0.2249
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.730E-02	0.0468
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.840E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 30 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.467E-03	0.0114	1.491E-03	0.0026	0.000E+00	0.0000	6.185E-03	0.0109	6.985E-06	0.0000	9.941E-07	0.0000	1.319E-03	0.0023
Np-237	1.716E-01	0.3032	1.996E-03	0.0035	0.000E+00	0.0000	1.660E-01	0.2934	2.800E-04	0.0005	9.175E-06	0.0000	1.772E-03	0.0031
Pu-239	5.026E-05	0.0001	1.686E-03	0.0030	0.000E+00	0.0000	7.032E-03	0.0124	1.588E-05	0.0000	5.598E-07	0.0000	1.501E-03	0.0027
Pu-240	2.787E-05	0.0000	1.673E-03	0.0030	0.000E+00	0.0000	6.978E-03	0.0123	1.576E-05	0.0000	5.556E-07	0.0000	1.490E-03	0.0026
Tc-99	2.119E-05	0.0000	3.231E-08	0.0000	0.000E+00	0.0000	2.657E-02	0.0470	1.549E-06	0.0000	4.213E-05	0.0001	6.120E-07	0.0000
U-234	1.052E-04	0.0002	5.184E-04	0.0009	0.000E+00	0.0000	2.080E-03	0.0037	1.762E-05	0.0000	2.850E-05	0.0001	1.199E-04	0.0002
U-235	1.284E-01	0.2269	5.322E-04	0.0009	0.000E+00	0.0000	2.452E-03	0.0043	1.667E-05	0.0000	2.694E-05	0.0000	1.320E-04	0.0002
U-238	2.458E-02	0.0434	4.628E-04	0.0008	0.000E+00	0.0000	1.971E-03	0.0035	1.673E-05	0.0000	2.706E-05	0.0000	1.137E-04	0.0002
Total	3.313E-01	0.5854	8.359E-03	0.0148	0.000E+00	0.0000	2.193E-01	0.3875	3.712E-04	0.0007	1.359E-04	0.0002	6.448E-03	0.0114

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.547E-02	0.0273
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.417E-01	0.6038
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.029E-02	0.0182
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.018E-02	0.0180
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.664E-02	0.0471
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.869E-03	0.0051
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.316E-01	0.2325
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.718E-02	0.0480
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.659E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 30 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.699E-03	0.0090	1.082E-03	0.0021	0.000E+00	0.0000	4.495E-03	0.0087	5.081E-06	0.0000	7.215E-07	0.0000	9.570E-04	0.0018
Np-237	1.506E-01	0.2899	1.752E-03	0.0034	0.000E+00	0.0000	1.457E-01	0.2805	2.457E-04	0.0005	8.075E-06	0.0000	1.555E-03	0.0030
Pu-239	4.986E-05	0.0001	1.671E-03	0.0032	0.000E+00	0.0000	6.973E-03	0.0134	1.574E-05	0.0000	5.551E-07	0.0000	1.488E-03	0.0029
Pu-240	2.721E-05	0.0001	1.633E-03	0.0031	0.000E+00	0.0000	6.813E-03	0.0131	1.538E-05	0.0000	5.426E-07	0.0000	1.454E-03	0.0028
Tc-99	2.053E-05	0.0000	3.131E-08	0.0000	0.000E+00	0.0000	2.575E-02	0.0496	1.501E-06	0.0000	4.081E-05	0.0001	5.929E-07	0.0000
U-234	3.709E-04	0.0007	5.136E-04	0.0010	0.000E+00	0.0000	2.089E-03	0.0040	1.744E-05	0.0000	2.822E-05	0.0001	1.192E-04	0.0002
U-235	1.282E-01	0.2468	6.564E-04	0.0013	0.000E+00	0.0000	3.427E-03	0.0066	1.651E-05	0.0000	2.664E-05	0.0001	1.753E-04	0.0003
U-238	2.426E-02	0.0467	4.570E-04	0.0009	0.000E+00	0.0000	1.946E-03	0.0037	1.652E-05	0.0000	2.671E-05	0.0001	1.123E-04	0.0002
Total	3.082E-01	0.5933	7.765E-03	0.0149	0.000E+00	0.0000	1.972E-01	0.3796	3.339E-04	0.0006	1.323E-04	0.0003	5.862E-03	0.0113

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E-02	0.0216
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.998E-01	0.5772
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.020E-02	0.0196
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.944E-03	0.0191
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.581E-02	0.0497
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.139E-03	0.0060
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.325E-01	0.2551
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.682E-02	0.0516
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.195E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.543E-03	0.0031	3.517E-04	0.0007	0.000E+00	0.0000	1.476E-03	0.0030	1.677E-06	0.0000	2.353E-07	0.0000	3.111E-04	0.0006
Np-237	9.535E-02	0.1912	1.111E-03	0.0022	0.000E+00	0.0000	9.222E-02	0.1850	1.555E-04	0.0003	5.180E-06	0.0000	9.849E-04	0.0020
Pu-239	4.848E-05	0.0001	1.622E-03	0.0033	0.000E+00	0.0000	6.768E-03	0.0136	1.528E-05	0.0000	5.388E-07	0.0000	1.445E-03	0.0029
Pu-240	2.502E-05	0.0001	1.502E-03	0.0030	0.000E+00	0.0000	6.265E-03	0.0126	1.415E-05	0.0000	4.995E-07	0.0000	1.337E-03	0.0027
Tc-99	1.837E-05	0.0000	2.802E-08	0.0000	0.000E+00	0.0000	2.305E-02	0.0462	1.343E-06	0.0000	3.653E-05	0.0001	5.307E-07	0.0000
U-234	3.040E-03	0.0061	4.971E-04	0.0010	0.000E+00	0.0000	2.372E-03	0.0048	1.729E-05	0.0000	2.818E-05	0.0001	1.202E-04	0.0002
U-235	1.276E-01	0.2559	1.075E-03	0.0022	0.000E+00	0.0000	6.693E-03	0.0134	1.599E-05	0.0000	2.563E-05	0.0001	3.207E-04	0.0006
U-238	2.315E-02	0.0464	4.370E-04	0.0009	0.000E+00	0.0000	1.861E-03	0.0037	1.580E-05	0.0000	2.555E-05	0.0001	1.074E-04	0.0002
Total	2.507E-01	0.5029	6.596E-03	0.0132	0.000E+00	0.0000	1.407E-01	0.2822	2.371E-04	0.0005	1.223E-04	0.0002	4.627E-03	0.0093

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.224E-05	0.0000	4.659E-07	0.0000	0.000E+00	0.0000	1.699E-08	0.0000	1.260E-10	0.0000	1.058E-11	0.0000	3.696E-03	0.0074
Np-237	9.192E-02	0.1844	3.499E-03	0.0070	0.000E+00	0.0000	1.276E-04	0.0003	9.466E-07	0.0000	7.955E-08	0.0000	2.854E-01	0.5724
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.900E-03	0.0199
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.144E-03	0.0183
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.310E-02	0.0463
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.075E-03	0.0122
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.357E-01	0.2722
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.560E-02	0.0513
Total	9.193E-02	0.1844	3.500E-03	0.0070	0.000E+00	0.0000	1.276E-04	0.0003	9.467E-07	0.0000	7.956E-08	0.0000	4.986E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 30 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.815E-02	1.812E-02	1.807E-02	1.786E-02	1.730E-02	1.546E-02	1.121E-02	3.644E-03
Am-241	Np-237+D	1.000E+00	5.741E-08	1.752E-07	4.102E-07	1.225E-06	3.481E-06	1.061E-05	2.538E-05	5.237E-05
Am-241	U-233	1.000E+00	9.278E-16	5.712E-15	2.829E-14	2.428E-13	1.991E-12	2.039E-11	1.565E-10	1.260E-09
Am-241	Th-229+D	1.000E+00	1.595E-18	2.373E-17	2.757E-16	7.270E-15	1.756E-13	6.021E-12	1.430E-10	3.570E-09
Am-241	ΣDSR (j)		1.815E-02	1.812E-02	1.807E-02	1.786E-02	1.730E-02	1.547E-02	1.124E-02	3.696E-03
Np-237+D	Np-237+D	1.000E+00	3.648E-01	3.645E-01	3.640E-01	3.624E-01	3.577E-01	3.417E-01	2.998E-01	2.853E-01
Np-237+D	U-233	1.000E+00	7.960E-09	2.151E-08	4.835E-08	1.420E-07	4.069E-07	1.304E-06	3.629E-06	1.250E-05
Np-237+D	Th-229+D	1.000E+00	1.963E-11	1.366E-10	7.201E-10	6.424E-09	5.385E-08	5.736E-07	4.859E-06	4.485E-05
Np-237+D	ΣDSR (j)		3.648E-01	3.645E-01	3.640E-01	3.624E-01	3.577E-01	3.417E-01	2.998E-01	2.854E-01
Pu-239	Pu-239	1.000E+00	1.033E-02	1.033E-02	1.033E-02	1.033E-02	1.032E-02	1.029E-02	1.020E-02	9.900E-03
Pu-239	U-235+D	1.000E+00	6.462E-11	1.939E-10	4.525E-10	1.357E-09	3.938E-09	1.293E-08	3.823E-08	1.225E-07
Pu-239	Pa-231	1.000E+00	8.339E-16	6.009E-15	3.215E-14	2.894E-13	2.443E-12	2.646E-11	2.344E-10	2.515E-09
Pu-239	Ac-227+D	1.000E+00	1.179E-17	1.691E-16	1.904E-15	4.728E-14	9.963E-13	2.345E-11	3.002E-10	3.722E-09
Pu-239	ΣDSR (j)		1.033E-02	1.033E-02	1.033E-02	1.033E-02	1.032E-02	1.029E-02	1.020E-02	9.900E-03
Pu-240	Pu-240	4.950E-08	5.102E-10	5.101E-10	5.100E-10	5.096E-10	5.084E-10	5.041E-10	4.922E-10	4.526E-10
Pu-240	Pu-240	1.000E+00	1.031E-02	1.031E-02	1.030E-02	1.029E-02	1.027E-02	1.018E-02	9.943E-03	9.144E-03
Pu-240	U-236	1.000E+00	3.830E-11	1.174E-10	2.758E-10	8.297E-10	2.408E-09	7.887E-09	2.315E-08	7.221E-08
Pu-240	Th-232	1.000E+00	3.535E-21	2.345E-20	1.209E-19	1.066E-18	8.937E-18	9.644E-17	8.511E-16	9.033E-15
Pu-240	Ra-228+D	1.000E+00	8.251E-21	1.221E-19	1.356E-18	2.997E-17	4.792E-16	7.327E-15	7.216E-14	7.961E-13
Pu-240	Th-228+D	1.000E+00	8.122E-22	2.310E-20	4.906E-19	2.243E-17	5.356E-16	9.585E-15	9.829E-14	1.099E-12
Pu-240	ΣDSR (j)		1.031E-02	1.031E-02	1.030E-02	1.029E-02	1.027E-02	1.018E-02	9.944E-03	9.144E-03
Tc-99	Tc-99	1.000E+00	2.707E-02	2.706E-02	2.705E-02	2.702E-02	2.694E-02	2.664E-02	2.581E-02	2.310E-02
U-234	U-234	1.000E+00	2.847E-03	2.847E-03	2.847E-03	2.845E-03	2.841E-03	2.828E-03	2.788E-03	2.656E-03
U-234	Th-230	1.000E+00	1.349E-08	3.892E-08	8.961E-08	2.670E-07	7.732E-07	2.539E-06	7.530E-06	2.439E-05
U-234	Ra-226+D	1.000E+00	1.285E-09	9.039E-09	4.787E-08	4.282E-07	3.600E-06	3.863E-05	3.338E-04	3.295E-03
U-234	Pb-210+D	1.000E+00	9.147E-13	9.193E-12	7.849E-11	1.581E-09	3.068E-08	6.988E-07	8.721E-06	9.959E-05
U-234	ΣDSR (j)		2.847E-03	2.847E-03	2.847E-03	2.846E-03	2.846E-03	2.869E-03	3.139E-03	6.075E-03
U-235+D	U-235+D	1.000E+00	1.313E-01	1.313E-01	1.313E-01	1.312E-01	1.311E-01	1.304E-01	1.287E-01	1.228E-01
U-235+D	Pa-231	1.000E+00	2.589E-06	7.928E-06	1.862E-05	5.602E-05	1.627E-04	5.346E-04	1.583E-03	5.096E-03
U-235+D	Ac-227+D	1.000E+00	4.702E-08	3.157E-07	1.611E-06	1.331E-05	9.244E-05	5.898E-04	2.234E-03	7.776E-03
U-235+D	ΣDSR (j)		1.313E-01	1.313E-01	1.313E-01	1.313E-01	1.313E-01	1.316E-01	1.325E-01	1.357E-01
U-238	U-238	5.400E-05	1.360E-07	1.360E-07	1.360E-07	1.359E-07	1.357E-07	1.351E-07	1.333E-07	1.272E-07
U-238+D	U-238+D	9.999E-01	2.736E-02	2.736E-02	2.735E-02	2.734E-02	2.730E-02	2.717E-02	2.681E-02	2.559E-02
U-238+D	U-234	9.999E-01	4.036E-09	1.211E-08	2.825E-08	8.470E-08	2.457E-07	8.057E-07	2.376E-06	7.543E-06
U-238+D	Th-230	9.999E-01	1.320E-14	8.758E-14	4.519E-13	3.989E-12	3.346E-11	3.615E-10	3.199E-09	3.427E-08
U-238+D	Ra-226+D	9.999E-01	9.081E-16	1.370E-14	1.603E-13	4.255E-12	1.038E-10	3.678E-09	9.552E-08	3.193E-06
U-238+D	Pb-210+D	9.999E-01	5.882E-19	1.219E-17	2.185E-16	1.250E-14	7.042E-13	5.610E-11	2.286E-09	9.357E-08
U-238+D	ΣDSR (j)		2.736E-02	2.736E-02	2.735E-02	2.734E-02	2.730E-02	2.718E-02	2.682E-02	2.560E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 30 m^2

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	1.377E+03	1.379E+03	1.384E+03	1.399E+03	1.445E+03	1.616E+03	2.224E+03	6.763E+03
Np-237	6.854E+01	6.858E+01	6.867E+01	6.899E+01	6.989E+01	7.317E+01	8.338E+01	8.761E+01
Pu-239	2.420E+03	2.420E+03	2.420E+03	2.421E+03	2.423E+03	2.430E+03	2.451E+03	2.525E+03
Pu-240	2.425E+03	2.426E+03	2.426E+03	2.428E+03	2.434E+03	2.455E+03	2.514E+03	2.734E+03
Tc-99	9.237E+02	9.238E+02	9.241E+02	9.252E+02	9.281E+02	9.384E+02	9.686E+02	1.082E+03
U-234	8.780E+03	8.780E+03	8.781E+03	8.784E+03	8.785E+03	8.712E+03	7.966E+03	4.115E+03
U-235	1.904E+02	1.904E+02	1.904E+02	1.904E+02	1.904E+02	1.900E+02	1.886E+02	1.842E+02
U-238	9.138E+02	9.139E+02	9.140E+02	9.144E+02	9.157E+02	9.199E+02	9.323E+02	9.766E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	1.815E-02	1.377E+03	1.815E-02	1.377E+03
Np-237	1.000E+00	595 ± 1	3.764E-01	6.642E+01	3.648E-01	6.854E+01
Pu-239	1.000E+00	0.000E+00	1.033E-02	2.420E+03	1.033E-02	2.420E+03
Pu-240	1.000E+00	0.000E+00	1.031E-02	2.425E+03	1.031E-02	2.425E+03
Tc-99	1.000E+00	0.000E+00	2.707E-02	9.237E+02	2.707E-02	9.237E+02
U-234	1.000E+00	1.000E+03	6.075E-03	4.115E+03	2.847E-03	8.780E+03
U-235	1.000E+00	1.000E+03	1.357E-01	1.842E+02	1.313E-01	1.904E+02
U-238	1.000E+00	0.000E+00	2.736E-02	9.138E+02	2.736E-02	9.138E+02

Summary : Hematite - Uniform CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.815E-02	1.812E-02	1.807E-02	1.786E-02	1.730E-02	1.546E-02	1.121E-02	3.644E-03
Np-237	Am-241	1.000E+00	5.741E-08	1.752E-07	4.102E-07	1.225E-06	3.481E-06	1.061E-05	2.538E-05	5.237E-05
Np-237	Np-237	1.000E+00	3.648E-01	3.645E-01	3.640E-01	3.624E-01	3.577E-01	3.417E-01	2.998E-01	2.853E-01
Np-237	ΣDOSE (j)		3.648E-01	3.645E-01	3.640E-01	3.624E-01	3.577E-01	3.417E-01	2.999E-01	2.854E-01
U-233	Am-241	1.000E+00	9.278E-16	5.712E-15	2.829E-14	2.428E-13	1.991E-12	2.039E-11	1.565E-10	1.260E-09
U-233	Np-237	1.000E+00	7.960E-09	2.151E-08	4.835E-08	1.420E-07	4.069E-07	1.304E-06	3.629E-06	1.250E-05
U-233	ΣDOSE (j)		7.960E-09	2.151E-08	4.835E-08	1.420E-07	4.069E-07	1.304E-06	3.629E-06	1.251E-05
Th-229	Am-241	1.000E+00	1.595E-18	2.373E-17	2.757E-16	7.270E-15	1.756E-13	6.021E-12	1.430E-10	3.570E-09
Th-229	Np-237	1.000E+00	1.963E-11	1.366E-10	7.201E-10	6.424E-09	5.385E-08	5.736E-07	4.859E-06	4.485E-05
Th-229	ΣDOSE (j)		1.963E-11	1.366E-10	7.201E-10	6.424E-09	5.385E-08	5.736E-07	4.859E-06	4.485E-05
Pu-239	Pu-239	1.000E+00	1.033E-02	1.033E-02	1.033E-02	1.033E-02	1.032E-02	1.029E-02	1.020E-02	9.900E-03
U-235	Pu-239	1.000E+00	6.462E-11	1.939E-10	4.525E-10	1.357E-09	3.938E-09	1.293E-08	3.823E-08	1.225E-07
U-235	U-235	1.000E+00	1.313E-01	1.313E-01	1.313E-01	1.312E-01	1.311E-01	1.304E-01	1.287E-01	1.228E-01
U-235	ΣDOSE (j)		1.313E-01	1.313E-01	1.313E-01	1.312E-01	1.311E-01	1.304E-01	1.287E-01	1.228E-01
Pa-231	Pu-239	1.000E+00	8.339E-16	6.009E-15	3.215E-14	2.894E-13	2.443E-12	2.646E-11	2.344E-10	2.515E-09
Pa-231	U-235	1.000E+00	2.589E-06	7.928E-06	1.862E-05	5.602E-05	1.627E-04	5.346E-04	1.583E-03	5.096E-03
Pa-231	ΣDOSE (j)		2.589E-06	7.928E-06	1.862E-05	5.602E-05	1.627E-04	5.346E-04	1.583E-03	5.096E-03
Ac-227	Pu-239	1.000E+00	1.179E-17	1.691E-16	1.904E-15	4.728E-14	9.963E-13	2.345E-11	3.002E-10	3.722E-09
Ac-227	U-235	1.000E+00	4.702E-08	3.157E-07	1.611E-06	1.331E-05	9.244E-05	5.898E-04	2.234E-03	7.776E-03
Ac-227	ΣDOSE (j)		4.702E-08	3.157E-07	1.611E-06	1.331E-05	9.244E-05	5.898E-04	2.234E-03	7.776E-03
Pu-240	Pu-240	4.950E-08	5.102E-10	5.101E-10	5.100E-10	5.096E-10	5.084E-10	5.041E-10	4.922E-10	4.526E-10
Pu-240	Pu-240	1.000E+00	1.031E-02	1.031E-02	1.030E-02	1.029E-02	1.027E-02	1.018E-02	9.943E-03	9.144E-03
Pu-240	ΣDOSE (j)		1.031E-02	1.031E-02	1.030E-02	1.029E-02	1.027E-02	1.018E-02	9.943E-03	9.144E-03
U-236	Pu-240	1.000E+00	3.830E-11	1.174E-10	2.758E-10	8.297E-10	2.408E-09	7.887E-09	2.315E-08	7.221E-08
Th-232	Pu-240	1.000E+00	3.535E-21	2.345E-20	1.209E-19	1.066E-18	8.937E-18	9.644E-17	8.511E-16	9.033E-15
Ra-228	Pu-240	1.000E+00	8.251E-21	1.221E-19	1.356E-18	2.997E-17	4.792E-16	7.327E-15	7.216E-14	7.961E-13
Th-228	Pu-240	1.000E+00	8.122E-22	2.310E-20	4.906E-19	2.243E-17	5.356E-16	9.585E-15	9.829E-14	1.099E-12
Tc-99	Tc-99	1.000E+00	2.707E-02	2.706E-02	2.705E-02	2.702E-02	2.694E-02	2.664E-02	2.581E-02	2.310E-02
U-234	U-234	1.000E+00	2.847E-03	2.847E-03	2.847E-03	2.845E-03	2.841E-03	2.828E-03	2.788E-03	2.656E-03
U-234	U-238	9.999E-01	4.036E-09	1.211E-08	2.825E-08	8.470E-08	2.457E-07	8.057E-07	2.376E-06	7.543E-06
U-234	ΣDOSE (j)		2.847E-03	2.847E-03	2.847E-03	2.846E-03	2.842E-03	2.828E-03	2.791E-03	2.663E-03
Th-230	U-234	1.000E+00	1.349E-08	3.892E-08	8.961E-08	2.670E-07	7.732E-07	2.539E-06	7.530E-06	2.439E-05
Th-230	U-238	9.999E-01	1.320E-14	8.758E-14	4.519E-13	3.989E-12	3.346E-11	3.615E-10	3.199E-09	3.427E-08
Th-230	ΣDOSE (j)		1.349E-08	3.892E-08	8.962E-08	2.670E-07	7.733E-07	2.539E-06	7.533E-06	2.442E-05

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	1.285E-09	9.039E-09	4.787E-08	4.282E-07	3.600E-06	3.863E-05	3.338E-04	3.295E-03
Ra-226	U-238	9.999E-01	9.081E-16	1.370E-14	1.603E-13	4.255E-12	1.038E-10	3.678E-09	9.552E-08	3.193E-06
Ra-226	ΣDOSE(j)		1.285E-09	9.039E-09	4.787E-08	4.282E-07	3.600E-06	3.863E-05	3.339E-04	3.299E-03
Pb-210	U-234	1.000E+00	9.147E-13	9.193E-12	7.849E-11	1.581E-09	3.068E-08	6.988E-07	8.721E-06	9.959E-05
Pb-210	U-238	9.999E-01	5.882E-19	1.219E-17	2.185E-16	1.250E-14	7.042E-13	5.610E-11	2.286E-09	9.357E-08
Pb-210	ΣDOSE(j)		9.147E-13	9.193E-12	7.849E-11	1.581E-09	3.068E-08	6.988E-07	8.724E-06	9.968E-05
U-238	U-238	5.400E-05	1.360E-07	1.360E-07	1.360E-07	1.359E-07	1.357E-07	1.351E-07	1.333E-07	1.272E-07
U-238	U-238	9.999E-01	2.736E-02	2.736E-02	2.735E-02	2.734E-02	2.730E-02	2.717E-02	2.681E-02	2.559E-02
U-238	ΣDOSE(j)		2.736E-02	2.736E-02	2.735E-02	2.734E-02	2.730E-02	2.718E-02	2.681E-02	2.559E-02

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM - AF 30 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 30 m^2

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.34 seconds

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Time = 0.000E+00	16
Time = 1.000E+00	17
Time = 3.000E+00	18
Time = 1.000E+01	19
Time = 3.000E+01	20
Time = 1.000E+02	21
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Summary : Hematite - Uniform CSM - AF 300 m^2

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Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Uniform CSM - AF 300 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Uniform CSM - AF 300 m^2

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Summary : Hematite - Uniform CSM - AF 300 m^2

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	300.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.854E+00	2.852E+00	2.849E+00	2.839E+00	2.809E+00	2.709E+00	2.450E+00	2.762E+00
M(t):	1.142E-01	1.141E-01	1.140E-01	1.136E-01	1.124E-01	1.084E-01	9.801E-02	1.105E-01

Maximum TDOSE(t): 3.440E+00 mrem/yr at t = 595 ± 1 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.779E-03	0.0011	8.685E-04	0.0003	0.000E+00	0.0000	2.809E-02	0.0082	3.181E-05	0.0000	4.498E-06	0.0000	5.960E-03	0.0017
Np-237	1.634E-01	0.0475	1.864E-03	0.0005	0.000E+00	0.0000	1.202E+00	0.3493	2.026E-03	0.0006	6.692E-05	0.0000	1.283E-02	0.0037
Pu-239	6.415E-05	0.0000	2.128E-03	0.0006	0.000E+00	0.0000	6.886E-02	0.0200	1.555E-04	0.0000	5.482E-06	0.0000	1.470E-02	0.0043
Pu-240	3.234E-05	0.0000	2.033E-03	0.0006	0.000E+00	0.0000	6.576E-02	0.0191	1.485E-04	0.0000	5.240E-06	0.0000	1.404E-02	0.0041
Tc-99	2.562E-05	0.0000	3.852E-08	0.0000	0.000E+00	0.0000	2.457E-01	0.0714	1.432E-05	0.0000	3.895E-04	0.0001	5.658E-06	0.0000
U-234	1.596E-03	0.0005	6.531E-04	0.0002	0.000E+00	0.0000	2.165E-02	0.0063	1.729E-04	0.0001	2.805E-04	0.0001	1.189E-03	0.0003
U-235	1.679E-01	0.0488	1.078E-03	0.0003	0.000E+00	0.0000	4.831E-02	0.0140	1.629E-04	0.0000	2.621E-04	0.0001	2.378E-03	0.0007
U-238	3.155E-02	0.0092	5.782E-04	0.0002	0.000E+00	0.0000	1.909E-02	0.0056	1.621E-04	0.0000	2.622E-04	0.0001	1.102E-03	0.0003
Total	3.683E-01	0.1071	9.203E-03	0.0027	0.000E+00	0.0000	1.699E+00	0.4939	2.874E-03	0.0008	1.276E-03	0.0004	5.220E-02	0.0152

Summary : Hematite - Uniform CSM - AF 300 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.400E-05	0.0000	1.675E-06	0.0000	0.000E+00	0.0000	6.109E-07	0.0000	4.528E-09	0.0000	3.801E-10	0.0000	3.878E-02	0.0113
Np-237	1.242E+00	0.3611	4.729E-02	0.0137	0.000E+00	0.0000	1.725E-02	0.0050	1.279E-04	0.0000	1.073E-05	0.0000	2.689E+00	0.7816
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.591E-02	0.0250
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.202E-02	0.0238
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.461E-01	0.0716
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.554E-02	0.0074
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.201E-01	0.0640
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.275E-02	0.0153
Total	1.242E+00	0.3611	4.729E-02	0.0137	0.000E+00	0.0000	1.725E-02	0.0050	1.279E-04	0.0000	1.073E-05	0.0000	3.440E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.762E-03	0.0034	2.257E-03	0.0008	0.000E+00	0.0000	7.256E-02	0.0254	8.192E-05	0.0000	1.167E-05	0.0000	1.549E-02	0.0054
Np-237	2.410E-01	0.0844	2.747E-03	0.0010	0.000E+00	0.0000	1.772E+00	0.6211	2.989E-03	0.0010	9.781E-05	0.0000	1.892E-02	0.0066
Pu-239	6.569E-05	0.0000	2.183E-03	0.0008	0.000E+00	0.0000	7.062E-02	0.0247	1.595E-04	0.0001	5.622E-06	0.0000	1.508E-02	0.0053
Pu-240	3.473E-05	0.0000	2.183E-03	0.0008	0.000E+00	0.0000	7.062E-02	0.0247	1.595E-04	0.0001	5.622E-06	0.0000	1.508E-02	0.0053
Tc-99	2.815E-05	0.0000	4.233E-08	0.0000	0.000E+00	0.0000	2.700E-01	0.0946	1.574E-05	0.0000	4.280E-04	0.0001	6.217E-06	0.0000
U-234	9.101E-05	0.0000	6.716E-04	0.0002	0.000E+00	0.0000	2.089E-02	0.0073	1.773E-04	0.0001	2.868E-04	0.0001	1.205E-03	0.0004
U-235	1.688E-01	0.0592	6.259E-04	0.0002	0.000E+00	0.0000	1.976E-02	0.0069	1.675E-04	0.0001	2.709E-04	0.0001	1.139E-03	0.0004
U-238	3.283E-02	0.0115	6.006E-04	0.0002	0.000E+00	0.0000	1.983E-02	0.0069	1.684E-04	0.0001	2.723E-04	0.0001	1.144E-03	0.0004
Total	4.526E-01	0.1586	1.127E-02	0.0039	0.000E+00	0.0000	2.317E+00	0.8118	3.918E-03	0.0014	1.379E-03	0.0005	6.805E-02	0.0238

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.002E-01	0.0351
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.038E+00	0.7142
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.811E-02	0.0309
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.808E-02	0.0309
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.705E-01	0.0948
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-02	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.908E-01	0.0669
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.485E-02	0.0192
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.854E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 300 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.747E-03	0.0034	2.254E-03	0.0008	0.000E+00	0.0000	7.245E-02	0.0254	8.179E-05	0.0000	1.165E-05	0.0000	1.546E-02	0.0054
Np-237	2.408E-01	0.0844	2.745E-03	0.0010	0.000E+00	0.0000	1.771E+00	0.6210	2.987E-03	0.0010	9.775E-05	0.0000	1.891E-02	0.0066
Pu-239	6.569E-05	0.0000	2.183E-03	0.0008	0.000E+00	0.0000	7.062E-02	0.0248	1.595E-04	0.0001	5.622E-06	0.0000	1.508E-02	0.0053
Pu-240	3.473E-05	0.0000	2.182E-03	0.0008	0.000E+00	0.0000	7.061E-02	0.0248	1.594E-04	0.0001	5.621E-06	0.0000	1.507E-02	0.0053
Tc-99	2.814E-05	0.0000	4.232E-08	0.0000	0.000E+00	0.0000	2.699E-01	0.0946	1.574E-05	0.0000	4.279E-04	0.0002	6.216E-06	0.0000
U-234	9.102E-05	0.0000	6.716E-04	0.0002	0.000E+00	0.0000	2.089E-02	0.0073	1.773E-04	0.0001	2.868E-04	0.0001	1.205E-03	0.0004
U-235	1.688E-01	0.0592	6.260E-04	0.0002	0.000E+00	0.0000	1.980E-02	0.0069	1.675E-04	0.0001	2.709E-04	0.0001	1.140E-03	0.0004
U-238	3.283E-02	0.0115	6.005E-04	0.0002	0.000E+00	0.0000	1.983E-02	0.0070	1.684E-04	0.0001	2.723E-04	0.0001	1.144E-03	0.0004
Total	4.524E-01	0.1586	1.126E-02	0.0039	0.000E+00	0.0000	2.315E+00	0.8117	3.916E-03	0.0014	1.379E-03	0.0005	6.801E-02	0.0238

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.000E-01	0.0351
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.037E+00	0.7141
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.811E-02	0.0309
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.807E-02	0.0309
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.704E-01	0.0948
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-02	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.908E-01	0.0669
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.484E-02	0.0192
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.852E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 300 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.715E-03	0.0034	2.246E-03	0.0008	0.000E+00	0.0000	7.222E-02	0.0253	8.153E-05	0.0000	1.161E-05	0.0000	1.542E-02	0.0054
Np-237	2.405E-01	0.0844	2.741E-03	0.0010	0.000E+00	0.0000	1.769E+00	0.6208	2.983E-03	0.0010	9.763E-05	0.0000	1.888E-02	0.0066
Pu-239	6.569E-05	0.0000	2.182E-03	0.0008	0.000E+00	0.0000	7.062E-02	0.0248	1.594E-04	0.0001	5.621E-06	0.0000	1.507E-02	0.0053
Pu-240	3.472E-05	0.0000	2.182E-03	0.0008	0.000E+00	0.0000	7.060E-02	0.0248	1.594E-04	0.0001	5.620E-06	0.0000	1.507E-02	0.0053
Tc-99	2.814E-05	0.0000	4.231E-08	0.0000	0.000E+00	0.0000	2.699E-01	0.0947	1.573E-05	0.0000	4.278E-04	0.0002	6.214E-06	0.0000
U-234	9.106E-05	0.0000	6.715E-04	0.0002	0.000E+00	0.0000	2.089E-02	0.0073	1.773E-04	0.0001	2.867E-04	0.0001	1.205E-03	0.0004
U-235	1.688E-01	0.0592	6.263E-04	0.0002	0.000E+00	0.0000	1.989E-02	0.0070	1.675E-04	0.0001	2.709E-04	0.0001	1.142E-03	0.0004
U-238	3.282E-02	0.0115	6.004E-04	0.0002	0.000E+00	0.0000	1.983E-02	0.0070	1.683E-04	0.0001	2.723E-04	0.0001	1.144E-03	0.0004
Total	4.520E-01	0.1586	1.125E-02	0.0039	0.000E+00	0.0000	2.313E+00	0.8117	3.912E-03	0.0014	1.378E-03	0.0005	6.794E-02	0.0238

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.969E-02	0.0350
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.034E+00	0.7139
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.810E-02	0.0309
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.805E-02	0.0309
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.703E-01	0.0949
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.332E-02	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.909E-01	0.0670
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.484E-02	0.0192
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.849E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.607E-03	0.0034	2.221E-03	0.0008	0.000E+00	0.0000	7.141E-02	0.0252	8.062E-05	0.0000	1.148E-05	0.0000	1.524E-02	0.0054
Np-237	2.394E-01	0.0843	2.729E-03	0.0010	0.000E+00	0.0000	1.761E+00	0.6203	2.969E-03	0.0010	9.719E-05	0.0000	1.880E-02	0.0066
Pu-239	6.567E-05	0.0000	2.182E-03	0.0008	0.000E+00	0.0000	7.059E-02	0.0249	1.594E-04	0.0001	5.620E-06	0.0000	1.507E-02	0.0053
Pu-240	3.469E-05	0.0000	2.180E-03	0.0008	0.000E+00	0.0000	7.054E-02	0.0248	1.593E-04	0.0001	5.615E-06	0.0000	1.506E-02	0.0053
Tc-99	2.810E-05	0.0000	4.226E-08	0.0000	0.000E+00	0.0000	2.696E-01	0.0950	1.571E-05	0.0000	4.273E-04	0.0002	6.208E-06	0.0000
U-234	9.149E-05	0.0000	6.713E-04	0.0002	0.000E+00	0.0000	2.088E-02	0.0074	1.772E-04	0.0001	2.866E-04	0.0001	1.205E-03	0.0004
U-235	1.687E-01	0.0594	6.280E-04	0.0002	0.000E+00	0.0000	2.020E-02	0.0071	1.674E-04	0.0001	2.708E-04	0.0001	1.150E-03	0.0004
U-238	3.281E-02	0.0116	6.002E-04	0.0002	0.000E+00	0.0000	1.982E-02	0.0070	1.683E-04	0.0001	2.721E-04	0.0001	1.144E-03	0.0004
Total	4.508E-01	0.1588	1.121E-02	0.0039	0.000E+00	0.0000	2.304E+00	0.8116	3.897E-03	0.0014	1.377E-03	0.0005	6.767E-02	0.0238

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.858E-02	0.0347
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.025E+00	0.7133
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.808E-02	0.0310
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.797E-02	0.0310
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.700E-01	0.0951
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.331E-02	0.0082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.912E-01	0.0673
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.481E-02	0.0193
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.839E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.305E-03	0.0033	2.151E-03	0.0008	0.000E+00	0.0000	6.917E-02	0.0246	7.809E-05	0.0000	1.112E-05	0.0000	1.476E-02	0.0053
Np-237	2.363E-01	0.0841	2.694E-03	0.0010	0.000E+00	0.0000	1.738E+00	0.6187	2.931E-03	0.0010	9.595E-05	0.0000	1.855E-02	0.0066
Pu-239	6.562E-05	0.0000	2.180E-03	0.0008	0.000E+00	0.0000	7.053E-02	0.0251	1.593E-04	0.0001	5.615E-06	0.0000	1.506E-02	0.0054
Pu-240	3.461E-05	0.0000	2.175E-03	0.0008	0.000E+00	0.0000	7.037E-02	0.0251	1.589E-04	0.0001	5.602E-06	0.0000	1.502E-02	0.0053
Tc-99	2.802E-05	0.0000	4.213E-08	0.0000	0.000E+00	0.0000	2.687E-01	0.0957	1.566E-05	0.0000	4.260E-04	0.0002	6.188E-06	0.0000
U-234	9.524E-05	0.0000	6.707E-04	0.0002	0.000E+00	0.0000	2.085E-02	0.0074	1.770E-04	0.0001	2.862E-04	0.0001	1.203E-03	0.0004
U-235	1.686E-01	0.0600	6.367E-04	0.0002	0.000E+00	0.0000	2.113E-02	0.0075	1.673E-04	0.0001	2.705E-04	0.0001	1.180E-03	0.0004
U-238	3.276E-02	0.0117	5.994E-04	0.0002	0.000E+00	0.0000	1.980E-02	0.0070	1.681E-04	0.0001	2.718E-04	0.0001	1.142E-03	0.0004
Total	4.472E-01	0.1592	1.111E-02	0.0040	0.000E+00	0.0000	2.279E+00	0.8112	3.855E-03	0.0014	1.373E-03	0.0005	6.692E-02	0.0238

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.547E-02	0.0340
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.999E+00	0.7115
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.800E-02	0.0313
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.776E-02	0.0312
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.692E-01	0.0958
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.328E-02	0.0083
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.920E-01	0.0684
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.474E-02	0.0195
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.809E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.321E-03	0.0031	1.923E-03	0.0007	0.000E+00	0.0000	6.185E-02	0.0228	6.985E-05	0.0000	9.941E-06	0.0000	1.319E-02	0.0049
Np-237	2.257E-01	0.0833	2.573E-03	0.0009	0.000E+00	0.0000	1.660E+00	0.6130	2.800E-03	0.0010	9.175E-05	0.0000	1.772E-02	0.0065
Pu-239	6.543E-05	0.0000	2.174E-03	0.0008	0.000E+00	0.0000	7.033E-02	0.0260	1.588E-04	0.0001	5.598E-06	0.0000	1.501E-02	0.0055
Pu-240	3.432E-05	0.0000	2.157E-03	0.0008	0.000E+00	0.0000	6.978E-02	0.0258	1.576E-04	0.0001	5.556E-06	0.0000	1.490E-02	0.0055
Tc-99	2.771E-05	0.0000	4.167E-08	0.0000	0.000E+00	0.0000	2.657E-01	0.0981	1.549E-05	0.0000	4.213E-04	0.0002	6.120E-06	0.0000
U-234	1.373E-04	0.0001	6.684E-04	0.0002	0.000E+00	0.0000	2.080E-02	0.0077	1.762E-04	0.0001	2.850E-04	0.0001	1.199E-03	0.0004
U-235	1.685E-01	0.0622	6.862E-04	0.0003	0.000E+00	0.0000	2.452E-02	0.0091	1.667E-04	0.0001	2.694E-04	0.0001	1.320E-03	0.0005
U-238	3.261E-02	0.0120	5.967E-04	0.0002	0.000E+00	0.0000	1.971E-02	0.0073	1.673E-04	0.0001	2.706E-04	0.0001	1.137E-03	0.0004
Total	4.354E-01	0.1607	1.078E-02	0.0040	0.000E+00	0.0000	2.193E+00	0.8096	3.712E-03	0.0014	1.359E-03	0.0005	6.448E-02	0.0238

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.537E-02	0.0315
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.909E+00	0.7048
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.774E-02	0.0324
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.703E-02	0.0321
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.662E-01	0.0983
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.326E-02	0.0086
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.954E-01	0.0721
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.449E-02	0.0201
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.709E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.047E-03	0.0025	1.395E-03	0.0006	0.000E+00	0.0000	4.495E-02	0.0183	5.081E-05	0.0000	7.215E-06	0.0000	9.570E-03	0.0039
Np-237	1.981E-01	0.0808	2.259E-03	0.0009	0.000E+00	0.0000	1.457E+00	0.5946	2.457E-03	0.0010	8.075E-05	0.0000	1.555E-02	0.0063
Pu-239	6.491E-05	0.0000	2.155E-03	0.0009	0.000E+00	0.0000	6.973E-02	0.0285	1.574E-04	0.0001	5.551E-06	0.0000	1.488E-02	0.0061
Pu-240	3.351E-05	0.0000	2.106E-03	0.0009	0.000E+00	0.0000	6.813E-02	0.0278	1.538E-04	0.0001	5.426E-06	0.0000	1.454E-02	0.0059
Tc-99	2.684E-05	0.0000	4.037E-08	0.0000	0.000E+00	0.0000	2.575E-01	0.1051	1.501E-05	0.0000	4.081E-04	0.0002	5.929E-06	0.0000
U-234	4.931E-04	0.0002	6.622E-04	0.0003	0.000E+00	0.0000	2.089E-02	0.0085	1.744E-04	0.0001	2.822E-04	0.0001	1.192E-03	0.0005
U-235	1.682E-01	0.0687	8.463E-04	0.0003	0.000E+00	0.0000	3.427E-02	0.0140	1.651E-04	0.0001	2.664E-04	0.0001	1.753E-03	0.0007
U-238	3.218E-02	0.0131	5.892E-04	0.0002	0.000E+00	0.0000	1.946E-02	0.0079	1.652E-04	0.0001	2.672E-04	0.0001	1.123E-03	0.0005
Total	4.051E-01	0.1653	1.001E-02	0.0041	0.000E+00	0.0000	1.972E+00	0.8047	3.339E-03	0.0014	1.323E-03	0.0005	5.862E-02	0.0239

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.202E-02	0.0253
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.675E+00	0.6838
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.700E-02	0.0355
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.497E-02	0.0347
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.579E-01	0.1053
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.370E-02	0.0097
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.055E-01	0.0839
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.378E-02	0.0219
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.450E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.986E-03	0.0007	4.534E-04	0.0002	0.000E+00	0.0000	1.476E-02	0.0053	1.677E-05	0.0000	2.353E-06	0.0000	3.111E-03	0.0011
Np-237	1.254E-01	0.0454	1.433E-03	0.0005	0.000E+00	0.0000	9.222E-01	0.3339	1.555E-03	0.0006	5.180E-05	0.0000	9.849E-03	0.0036
Pu-239	6.312E-05	0.0000	2.092E-03	0.0008	0.000E+00	0.0000	6.768E-02	0.0245	1.528E-04	0.0001	5.388E-06	0.0000	1.445E-02	0.0052
Pu-240	3.081E-05	0.0000	1.936E-03	0.0007	0.000E+00	0.0000	6.265E-02	0.0227	1.415E-04	0.0001	4.995E-06	0.0000	1.337E-02	0.0048
Tc-99	2.403E-05	0.0000	3.613E-08	0.0000	0.000E+00	0.0000	2.305E-01	0.0834	1.343E-05	0.0000	3.653E-04	0.0001	5.307E-06	0.0000
U-234	4.068E-03	0.0015	6.410E-04	0.0002	0.000E+00	0.0000	2.372E-02	0.0086	1.729E-04	0.0001	2.818E-04	0.0001	1.202E-03	0.0004
U-235	1.674E-01	0.0606	1.385E-03	0.0005	0.000E+00	0.0000	6.693E-02	0.0242	1.599E-04	0.0001	2.563E-04	0.0001	3.207E-03	0.0012
U-238	3.071E-02	0.0111	5.635E-04	0.0002	0.000E+00	0.0000	1.861E-02	0.0067	1.580E-04	0.0001	2.555E-04	0.0001	1.074E-03	0.0004
Total	3.297E-01	0.1194	8.505E-03	0.0031	0.000E+00	0.0000	1.407E+00	0.5094	2.371E-03	0.0009	1.223E-03	0.0004	4.627E-02	0.0168

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.224E-04	0.0000	4.659E-06	0.0000	0.000E+00	0.0000	1.699E-06	0.0000	1.260E-08	0.0000	1.058E-09	0.0000	2.046E-02	0.0074
Np-237	9.192E-01	0.3328	3.499E-02	0.0127	0.000E+00	0.0000	1.276E-02	0.0046	9.466E-05	0.0000	7.955E-06	0.0000	2.028E+00	0.7340
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.445E-02	0.0306
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.814E-02	0.0283
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.309E-01	0.0836
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.008E-02	0.0109
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.393E-01	0.0866
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.137E-02	0.0186
Total	9.193E-01	0.3328	3.500E-02	0.0127	0.000E+00	0.0000	1.276E-02	0.0046	9.467E-05	0.0000	7.956E-06	0.0000	2.762E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 300 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.002E-01	1.000E-01	9.968E-02	9.857E-02	9.545E-02	8.531E-02	6.187E-02	2.011E-02
Am-241	Np-237+D	1.000E+00	3.135E-07	9.709E-07	2.284E-06	6.835E-06	1.944E-05	5.925E-05	1.418E-04	3.503E-04
Am-241	U-233	1.000E+00	7.695E-15	4.605E-14	2.245E-13	1.908E-12	1.560E-11	1.595E-10	1.224E-09	1.033E-08
Am-241	Th-229+D	1.000E+00	2.751E-18	3.945E-17	4.513E-16	1.181E-14	2.844E-13	9.743E-12	2.313E-10	5.777E-09
Am-241	ΣDSR (j)		1.002E-01	1.000E-01	9.969E-02	9.858E-02	9.547E-02	8.537E-02	6.202E-02	2.046E-02
Np-237+D	Np-237+D	1.000E+00	2.038E+00	2.037E+00	2.034E+00	2.025E+00	1.999E+00	1.909E+00	1.675E+00	2.027E+00
Np-237+D	U-233	1.000E+00	6.494E-08	1.711E-07	3.809E-07	1.113E-06	3.184E-06	1.020E-05	2.838E-05	1.047E-04
Np-237+D	Th-229+D	1.000E+00	3.322E-11	2.250E-10	1.174E-09	1.042E-08	8.719E-08	9.281E-07	7.860E-06	7.259E-05
Np-237+D	ΣDSR (j)		2.038E+00	2.037E+00	2.034E+00	2.025E+00	1.999E+00	1.909E+00	1.675E+00	2.028E+00
Pu-239	Pu-239	1.000E+00	8.811E-02	8.811E-02	8.810E-02	8.808E-02	8.800E-02	8.774E-02	8.700E-02	8.445E-02
Pu-239	U-235+D	1.000E+00	9.351E-11	2.813E-10	6.570E-10	1.971E-09	5.721E-09	1.878E-08	5.554E-08	1.780E-07
Pu-239	Pa-231	1.000E+00	7.232E-15	5.234E-14	2.806E-13	2.528E-12	2.135E-11	2.312E-10	2.048E-09	2.198E-08
Pu-239	Ac-227+D	1.000E+00	3.163E-17	4.058E-16	4.270E-15	1.017E-13	2.111E-12	4.943E-11	6.319E-10	7.831E-09
Pu-239	ΣDSR (j)		8.811E-02	8.811E-02	8.810E-02	8.808E-02	8.800E-02	8.774E-02	8.700E-02	8.445E-02
Pu-240	Pu-240	4.950E-08	4.360E-09	4.359E-09	4.358E-09	4.355E-09	4.344E-09	4.308E-09	4.206E-09	3.868E-09
Pu-240	Pu-240	1.000E+00	8.808E-02	8.807E-02	8.805E-02	8.797E-02	8.776E-02	8.703E-02	8.497E-02	7.814E-02
Pu-240	U-236	1.000E+00	3.143E-10	9.681E-10	2.278E-09	6.857E-09	1.991E-08	6.521E-08	1.914E-07	5.970E-07
Pu-240	Th-232	1.000E+00	2.144E-20	1.371E-19	6.940E-19	6.059E-18	5.061E-17	5.454E-16	4.812E-15	5.106E-14
Pu-240	Ra-228+D	1.000E+00	2.266E-20	3.454E-19	3.891E-18	8.672E-17	1.390E-15	2.127E-14	2.096E-13	2.312E-12
Pu-240	Th-228+D	1.000E+00	1.175E-21	3.250E-20	6.790E-19	3.073E-17	7.315E-16	1.308E-14	1.341E-13	1.499E-12
Pu-240	ΣDSR (j)		8.808E-02	8.807E-02	8.805E-02	8.797E-02	8.776E-02	8.703E-02	8.497E-02	7.814E-02
Tc-99	Tc-99	1.000E+00	2.705E-01	2.704E-01	2.703E-01	2.700E-01	2.692E-01	2.662E-01	2.579E-01	2.309E-01
U-234	U-234	1.000E+00	2.332E-02	2.332E-02	2.332E-02	2.330E-02	2.327E-02	2.316E-02	2.284E-02	2.175E-02
U-234	Th-230	1.000E+00	7.633E-08	2.134E-07	4.861E-07	1.440E-06	4.163E-06	1.366E-05	4.050E-05	1.312E-04
U-234	Ra-226+D	1.000E+00	2.723E-09	1.952E-08	1.042E-07	9.363E-07	7.882E-06	8.461E-05	7.314E-04	7.220E-03
U-234	Pb-210+D	1.000E+00	9.098E-12	9.120E-11	7.764E-10	1.560E-08	3.023E-07	6.882E-06	8.588E-05	9.807E-04
U-234	ΣDSR (j)		2.332E-02	2.332E-02	2.332E-02	2.331E-02	2.328E-02	2.326E-02	2.370E-02	3.008E-02
U-235+D	U-235+D	1.000E+00	1.908E-01	1.908E-01	1.907E-01	1.906E-01	1.904E-01	1.895E-01	1.870E-01	1.784E-01
U-235+D	Pa-231	1.000E+00	2.252E-05	6.916E-05	1.626E-04	4.894E-04	1.422E-03	4.672E-03	1.384E-02	4.453E-02
U-235+D	Ac-227+D	1.000E+00	1.204E-07	7.302E-07	3.540E-06	2.840E-05	1.954E-04	1.242E-03	4.700E-03	1.636E-02
U-235+D	ΣDSR (j)		1.908E-01	1.908E-01	1.909E-01	1.912E-01	1.920E-01	1.954E-01	2.055E-01	2.393E-01
U-238	U-238	5.400E-05	1.131E-06	1.131E-06	1.131E-06	1.131E-06	1.129E-06	1.124E-06	1.109E-06	1.058E-06
U-238+D	U-238+D	9.999E-01	5.485E-02	5.484E-02	5.484E-02	5.481E-02	5.474E-02	5.448E-02	5.376E-02	5.130E-02
U-238+D	U-234	9.999E-01	3.306E-08	9.916E-08	2.313E-07	6.937E-07	2.012E-06	6.599E-06	1.946E-05	6.178E-05
U-238+D	Th-230	9.999E-01	7.661E-14	4.883E-13	2.471E-12	2.158E-11	1.803E-10	1.945E-09	1.721E-08	1.843E-07
U-238+D	Ra-226+D	9.999E-01	1.905E-15	2.941E-14	3.480E-13	9.294E-12	2.273E-10	8.055E-09	2.093E-07	6.996E-06
U-238+D	Pb-210+D	9.999E-01	5.854E-18	1.210E-16	2.164E-15	1.234E-13	6.941E-12	5.526E-10	2.251E-08	9.214E-07
U-238+D	ΣDSR (j)		5.485E-02	5.484E-02	5.484E-02	5.481E-02	5.474E-02	5.449E-02	5.378E-02	5.137E-02

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 300 m²

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Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		2.496E+02	2.500E+02	2.508E+02	2.536E+02	2.619E+02	2.929E+02	4.031E+02	1.222E+03
Np-237		1.227E+01	1.227E+01	1.229E+01	1.235E+01	1.251E+01	1.309E+01	1.492E+01	1.233E+01
Pu-239		2.837E+02	2.837E+02	2.838E+02	2.838E+02	2.841E+02	2.849E+02	2.874E+02	2.960E+02
Pu-240		2.838E+02	2.839E+02	2.839E+02	2.842E+02	2.849E+02	2.873E+02	2.942E+02	3.199E+02
Tc-99		9.243E+01	9.245E+01	9.248E+01	9.258E+01	9.287E+01	9.391E+01	9.693E+01	1.083E+02
U-234		1.072E+03	1.072E+03	1.072E+03	1.073E+03	1.074E+03	1.075E+03	1.055E+03	8.310E+02
U-235		1.310E+02	1.310E+02	1.310E+02	1.308E+02	1.302E+02	1.279E+02	1.216E+02	1.045E+02
U-238		4.558E+02	4.558E+02	4.559E+02	4.561E+02	4.567E+02	4.588E+02	4.649E+02	4.867E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	1.002E-01	2.496E+02	3.878E-02	6.447E+02
Np-237	1.000E+00	595 ± 1	2.689E+00	9.299E+00	2.689E+00	9.299E+00
Pu-239	1.000E+00	0.000E+00	8.811E-02	2.837E+02	8.591E-02	2.910E+02
Pu-240	1.000E+00	0.000E+00	8.808E-02	2.838E+02	8.202E-02	3.048E+02
Tc-99	1.000E+00	0.000E+00	2.705E-01	9.243E+01	2.461E-01	1.016E+02
U-234	1.000E+00	1.000E+03	3.008E-02	8.310E+02	2.554E-02	9.787E+02
U-235	1.000E+00	1.000E+03	2.393E-01	1.045E+02	2.201E-01	1.136E+02
U-238	1.000E+00	0.000E+00	5.485E-02	4.558E+02	5.275E-02	4.740E+02

Summary : Hematite - Uniform CSM - AF 300 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.002E-01	1.000E-01	9.968E-02	9.857E-02	9.545E-02	8.531E-02	6.187E-02	2.011E-02
Np-237	Am-241	1.000E+00	3.135E-07	9.709E-07	2.284E-06	6.835E-06	1.944E-05	5.925E-05	1.418E-04	3.503E-04
Np-237	Np-237	1.000E+00	2.038E+00	2.037E+00	2.034E+00	2.025E+00	1.999E+00	1.909E+00	1.675E+00	2.027E+00
Np-237	ΣDOSE (j)		2.038E+00	2.037E+00	2.034E+00	2.025E+00	1.999E+00	1.909E+00	1.676E+00	2.028E+00
U-233	Am-241	1.000E+00	7.695E-15	4.605E-14	2.245E-13	1.908E-12	1.560E-11	1.595E-10	1.224E-09	1.033E-08
U-233	Np-237	1.000E+00	6.494E-08	1.711E-07	3.809E-07	1.113E-06	3.184E-06	1.020E-05	2.838E-05	1.047E-04
U-233	ΣDOSE (j)		6.494E-08	1.711E-07	3.809E-07	1.113E-06	3.184E-06	1.020E-05	2.838E-05	1.047E-04
Th-229	Am-241	1.000E+00	2.751E-18	3.945E-17	4.513E-16	1.181E-14	2.844E-13	9.743E-12	2.313E-10	5.777E-09
Th-229	Np-237	1.000E+00	3.322E-11	2.250E-10	1.174E-09	1.042E-08	8.719E-08	9.281E-07	7.860E-06	7.259E-05
Th-229	ΣDOSE (j)		3.322E-11	2.250E-10	1.174E-09	1.042E-08	8.719E-08	9.281E-07	7.861E-06	7.260E-05
Pu-239	Pu-239	1.000E+00	8.811E-02	8.811E-02	8.810E-02	8.808E-02	8.800E-02	8.774E-02	8.700E-02	8.445E-02
U-235	Pu-239	1.000E+00	9.351E-11	2.813E-10	6.570E-10	1.971E-09	5.721E-09	1.878E-08	5.554E-08	1.780E-07
U-235	U-235	1.000E+00	1.908E-01	1.908E-01	1.907E-01	1.906E-01	1.904E-01	1.895E-01	1.870E-01	1.784E-01
U-235	ΣDOSE (j)		1.908E-01	1.908E-01	1.907E-01	1.906E-01	1.904E-01	1.895E-01	1.870E-01	1.784E-01
Pa-231	Pu-239	1.000E+00	7.232E-15	5.234E-14	2.806E-13	2.528E-12	2.135E-11	2.312E-10	2.048E-09	2.198E-08
Pa-231	U-235	1.000E+00	2.252E-05	6.916E-05	1.626E-04	4.894E-04	1.422E-03	4.672E-03	1.384E-02	4.453E-02
Pa-231	ΣDOSE (j)		2.252E-05	6.916E-05	1.626E-04	4.894E-04	1.422E-03	4.672E-03	1.384E-02	4.453E-02
Ac-227	Pu-239	1.000E+00	3.163E-17	4.058E-16	4.270E-15	1.017E-13	2.111E-12	4.943E-11	6.319E-10	7.831E-09
Ac-227	U-235	1.000E+00	1.204E-07	7.302E-07	3.540E-06	2.840E-05	1.954E-04	1.242E-03	4.700E-03	1.636E-02
Ac-227	ΣDOSE (j)		1.204E-07	7.302E-07	3.540E-06	2.840E-05	1.954E-04	1.242E-03	4.700E-03	1.636E-02
Pu-240	Pu-240	4.950E-08	4.360E-09	4.359E-09	4.358E-09	4.355E-09	4.344E-09	4.308E-09	4.206E-09	3.868E-09
Pu-240	Pu-240	1.000E+00	8.808E-02	8.807E-02	8.805E-02	8.797E-02	8.776E-02	8.703E-02	8.497E-02	7.814E-02
Pu-240	ΣDOSE (j)		8.808E-02	8.807E-02	8.805E-02	8.797E-02	8.776E-02	8.703E-02	8.497E-02	7.814E-02
U-236	Pu-240	1.000E+00	3.143E-10	9.681E-10	2.278E-09	6.857E-09	1.991E-08	6.521E-08	1.914E-07	5.970E-07
Th-232	Pu-240	1.000E+00	2.144E-20	1.371E-19	6.940E-19	6.059E-18	5.061E-17	5.454E-16	4.812E-15	5.106E-14
Ra-228	Pu-240	1.000E+00	2.266E-20	3.454E-19	3.891E-18	8.672E-17	1.390E-15	2.127E-14	2.096E-13	2.312E-12
Th-228	Pu-240	1.000E+00	1.175E-21	3.250E-20	6.790E-19	3.073E-17	7.315E-16	1.308E-14	1.341E-13	1.499E-12
Tc-99	Tc-99	1.000E+00	2.705E-01	2.704E-01	2.703E-01	2.700E-01	2.692E-01	2.662E-01	2.579E-01	2.309E-01
U-234	U-234	1.000E+00	2.332E-02	2.332E-02	2.332E-02	2.330E-02	2.327E-02	2.316E-02	2.284E-02	2.175E-02
U-234	U-238	9.999E-01	3.306E-08	9.916E-08	2.313E-07	6.937E-07	2.012E-06	6.599E-06	1.946E-05	6.178E-05
U-234	ΣDOSE (j)		2.332E-02	2.332E-02	2.332E-02	2.331E-02	2.327E-02	2.317E-02	2.286E-02	2.181E-02
Th-230	U-234	1.000E+00	7.633E-08	2.134E-07	4.861E-07	1.440E-06	4.163E-06	1.366E-05	4.050E-05	1.312E-04
Th-230	U-238	9.999E-01	7.661E-14	4.883E-13	2.471E-12	2.158E-11	1.803E-10	1.945E-09	1.721E-08	1.843E-07
Th-230	ΣDOSE (j)		7.633E-08	2.134E-07	4.861E-07	1.440E-06	4.163E-06	1.366E-05	4.052E-05	1.314E-04

Summary : Hematite - Uniform CSM - AF 300 m^2

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	2.723E-09	1.952E-08	1.042E-07	9.363E-07	7.882E-06	8.461E-05	7.314E-04	7.220E-03
Ra-226	U-238	9.999E-01	1.905E-15	2.941E-14	3.480E-13	9.294E-12	2.273E-10	8.055E-09	2.093E-07	6.996E-06
Ra-226	ΣDOSE(j)		2.723E-09	1.952E-08	1.042E-07	9.363E-07	7.882E-06	8.462E-05	7.316E-04	7.227E-03
Pb-210	U-234	1.000E+00	9.098E-12	9.120E-11	7.764E-10	1.560E-08	3.023E-07	6.882E-06	8.588E-05	9.807E-04
Pb-210	U-238	9.999E-01	5.854E-18	1.210E-16	2.164E-15	1.234E-13	6.941E-12	5.526E-10	2.251E-08	9.214E-07
Pb-210	ΣDOSE(j)		9.098E-12	9.120E-11	7.764E-10	1.560E-08	3.023E-07	6.883E-06	8.591E-05	9.816E-04
U-238	U-238	5.400E-05	1.131E-06	1.131E-06	1.131E-06	1.131E-06	1.129E-06	1.124E-06	1.109E-06	1.058E-06
U-238	U-238	9.999E-01	5.485E-02	5.484E-02	5.484E-02	5.481E-02	5.474E-02	5.448E-02	5.376E-02	5.130E-02
U-238	ΣDOSE(j)		5.485E-02	5.484E-02	5.484E-02	5.481E-02	5.474E-02	5.448E-02	5.376E-02	5.130E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 300 m²

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Attachment 4 to HEM-11-91

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Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.28 seconds

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Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(2)
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(3)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(4)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(5)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(6)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(7)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(8)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(9)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(10)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(11)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(12)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(13)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(14)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(15)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(16)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(17)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(18)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(19)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(20)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(21)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(22)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(23)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(24)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(25)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(26)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(27)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(28)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(29)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(30)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(31)
A-1	Pu-239 (Source: FGR 12)	2.952E-04	2.952E-04	DCF1(32)
A-1	Pu-240 (Source: FGR 12)	1.467E-04	1.467E-04	DCF1(33)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(34)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(35)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(36)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(37)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(38)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(39)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(40)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(41)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(42)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(43)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(44)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(45)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(46)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(47)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(48)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(49)

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(50)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(51)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(52)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(53)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(54)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(55)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(56)
A-1	U-236 (Source: FGR 12)	2.148E-04	2.148E-04	DCF1(57)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(58)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(3)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(4)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(5)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(6)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(9)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(10)
B-1	Tc-99	8.320E-06	8.320E-06	DCF2(11)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(12)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(13)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(14)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(15)
B-1	U-233	1.350E-01	1.350E-01	DCF2(16)
B-1	U-234	1.320E-01	1.320E-01	DCF2(17)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(18)
B-1	U-236	1.250E-01	1.250E-01	DCF2(19)
B-1	U-238	1.180E-01	1.180E-01	DCF2(20)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(21)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(3)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(4)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(5)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(6)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(9)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(10)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(11)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(12)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(13)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(14)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(15)
D-1	U-233	2.890E-04	2.890E-04	DCF3(16)
D-1	U-234	2.830E-04	2.830E-04	DCF3(17)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(18)

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-236	2.690E-04	2.690E-04	DCF3(19)
D-1	U-238	2.550E-04	2.550E-04	DCF3(20)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(21)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	1.000E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-05	5.000E-06	RTF(3,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-06	5.000E-03	RTF(4,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(4,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(6,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(6,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(7,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	9.900E-07	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(9,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(9,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(10,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	9.270E+00	5.000E+00	RTF(11,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(11,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(12,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(12,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(12,3)
D-34				

Summary : Hematite - Uniform CSM - AF 3,000 m^2

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(13,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(13,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(13,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(14,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(14,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(14,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(15,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(15,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(15,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(16,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(16,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(16,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(17,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(17,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(17,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(18,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(18,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(18,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(19,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(19,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(19,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(20,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(20,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(20,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	3.700E-03	2.500E-03	RTF(21,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-03	3.400E-04	RTF(21,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.480E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	2.970E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Np-237+D , fish	2.940E+01	3.000E+01	BIOFAC(3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(3,2)
D-5				
D-5	Pa-231 , fish	9.900E+00	1.000E+01	BIOFAC(4,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(4,2)
D-5				

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(5,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Pu-239 , fish	2.980E+01	3.000E+01	BIOFAC(6,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)
D-5				
D-5	Pu-240 , fish	2.980E+01	3.000E+01	BIOFAC(7,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)
D-5				
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(9,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(9,2)
D-5				
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(10,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(10,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(11,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(11,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(12,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(12,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(13,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(13,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(14,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(14,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(15,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(15,2)
D-5				
D-5	U-233 , fish	9.900E+00	1.000E+01	BIOFAC(16,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(16,2)
D-5				
D-5	U-234 , fish	9.900E+00	1.000E+01	BIOFAC(17,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(17,2)
D-5				
D-5	U-235+D , fish	9.900E+00	1.000E+01	BIOFAC(18,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(18,2)
D-5				
D-5	U-236 , fish	9.900E+00	1.000E+01	BIOFAC(19,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(19,2)
D-5				
D-5	U-238 , fish	9.900E+00	1.000E+01	BIOFAC(20,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(20,2)
D-5				
D-5	U-238+D , fish	9.900E+00	1.000E+01	BIOFAC(21,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Appendix N

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Pu-239	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): Pu-240	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): Tc-99	1.000E+00	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(17)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(20)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(17)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(20)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Density of saturated zone (g/cm ³)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm ³ /g)	8.400E+03	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm ³ /g)	1.900E+03	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.961E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm ³ /g)	2.500E+01	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm ³ /g)	1.700E+01	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.531E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(6,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm ³ /g)	1.200E+03	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm ³ /g)	5.500E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.372E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCC (11)
R016	Unsaturated zone 1 (cm**3/g)	1.060E+02	0.000E+00	---	DCNUCU (11,1)
R016	Saturated zone (cm**3/g)	1.000E-01	0.000E+00	---	DCNUCS (11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.551E-04	ALEACH (11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (11)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (17)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (17,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (17)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (18)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (18,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (18)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (20)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (20,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (20)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	9.200E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.996E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	1.800E+03	5.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	5.500E+02	5.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.149E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)

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Site-Specific Parameter Summary (continued)

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R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCC (19)
R016	Unsaturated zone 1 (cm**3/g)	2.460E+02	5.000E+01	---	DCNUCU (19,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCS (19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.690E-05	ALEACH (19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (19)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3000.00 square meters	Am-241	1.000E+00
Thickness:	6.70 meters	Np-237	1.000E+00
Cover Depth:	0.00 meters	Pu-239	1.000E+00
		Pu-240	1.000E+00
		Tc-99	1.000E+00
		U-234	1.000E+00
		U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr							
Basic Radiation Dose Limit = 2.500E+01 mrem/yr							
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)							
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
TDOSE(t):	8.495E+00	8.490E+00	8.481E+00	8.449E+00	8.358E+00	8.050E+00	7.256E+00
M(t):	3.398E-01	3.396E-01	3.392E-01	3.380E-01	3.343E-01	3.220E-01	2.902E-01
Maximum TDOSE(t):	1.976E+01 mrem/yr	at t =		595 ± 1 years			

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Nuclide														
Am-241	4.011E-03	0.0002	1.115E-03	0.0001	0.000E+00	0.0000	9.362E-02	0.0047	3.181E-04	0.0000	4.498E-05	0.0000	1.987E-02	0.0010
Np-237	1.729E-01	0.0087	2.393E-03	0.0001	0.000E+00	0.0000	4.005E+00	0.2026	2.026E-02	0.0010	6.692E-04	0.0000	4.276E-02	0.0022
Pu-239	6.760E-05	0.0000	2.733E-03	0.0001	0.000E+00	0.0000	2.295E-01	0.0116	1.555E-03	0.0001	5.482E-05	0.0000	4.900E-02	0.0025
Pu-240	3.344E-05	0.0000	2.610E-03	0.0001	0.000E+00	0.0000	2.192E-01	0.0111	1.485E-03	0.0001	5.240E-05	0.0000	4.679E-02	0.0024
Tc-99	2.690E-05	0.0000	4.947E-08	0.0000	0.000E+00	0.0000	8.190E-01	0.0414	1.432E-04	0.0000	3.895E-03	0.0002	1.886E-05	0.0000
U-234	1.707E-03	0.0001	8.386E-04	0.0000	0.000E+00	0.0000	7.217E-02	0.0037	1.729E-03	0.0001	2.805E-03	0.0001	3.965E-03	0.0002
U-235	1.766E-01	0.0089	1.384E-03	0.0001	0.000E+00	0.0000	1.610E-01	0.0081	1.629E-03	0.0001	2.621E-03	0.0001	7.927E-03	0.0004
U-238	3.370E-02	0.0017	7.424E-04	0.0000	0.000E+00	0.0000	6.365E-02	0.0032	1.621E-03	0.0001	2.622E-03	0.0001	3.672E-03	0.0002
Total	3.891E-01	0.0197	1.182E-02	0.0006	0.000E+00	0.0000	5.663E+00	0.2866	2.874E-02	0.0015	1.276E-02	0.0006	1.740E-01	0.0088

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 5.950E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	4.400E-04	0.0000	1.675E-05	0.0000	0.000E+00	0.0000	2.036E-05	0.0000	4.528E-07	0.0000	3.801E-08	0.0000	1.195E-01	0.0060
Np-237	1.242E+01	0.6285	4.729E-01	0.0239	0.000E+00	0.0000	5.749E-01	0.0291	1.279E-02	0.0006	1.073E-03	0.0001	1.773E+01	0.8970
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.829E-01	0.0143
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.702E-01	0.0137
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.231E-01	0.0416
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.321E-02	0.0042
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.512E-01	0.0178
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.060E-01	0.0054
Total	1.242E+01	0.6285	4.729E-01	0.0239	0.000E+00	0.0000	5.750E-01	0.0291	1.279E-02	0.0006	1.073E-03	0.0001	1.976E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.036E-02	0.0012	2.898E-03	0.0003	0.000E+00	0.0000	2.419E-01	0.0285	8.192E-04	0.0001	1.167E-04	0.0000	5.163E-02	0.0061
Np-237	2.551E-01	0.0300	3.527E-03	0.0004	0.000E+00	0.0000	5.908E+00	0.6955	2.989E-02	0.0035	9.781E-04	0.0001	6.306E-02	0.0074
Pu-239	6.923E-05	0.0000	2.803E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0277	1.595E-03	0.0002	5.622E-05	0.0000	5.025E-02	0.0059
Pu-240	3.591E-05	0.0000	2.803E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0277	1.595E-03	0.0002	5.622E-05	0.0000	5.025E-02	0.0059
Tc-99	2.956E-05	0.0000	5.435E-08	0.0000	0.000E+00	0.0000	9.000E-01	0.1059	1.574E-04	0.0000	4.280E-03	0.0005	2.072E-05	0.0000
U-234	9.543E-05	0.0000	8.624E-04	0.0001	0.000E+00	0.0000	6.963E-02	0.0082	1.773E-03	0.0002	2.868E-03	0.0003	4.017E-03	0.0005
U-235	1.775E-01	0.0209	8.037E-04	0.0001	0.000E+00	0.0000	6.585E-02	0.0078	1.675E-03	0.0002	2.709E-03	0.0003	3.797E-03	0.0004
U-238	3.507E-02	0.0041	7.711E-04	0.0001	0.000E+00	0.0000	6.611E-02	0.0078	1.684E-03	0.0002	2.723E-03	0.0003	3.814E-03	0.0004
Total	4.783E-01	0.0563	1.447E-02	0.0017	0.000E+00	0.0000	7.722E+00	0.9091	3.918E-02	0.0046	1.379E-02	0.0016	2.268E-01	0.0267

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.077E-01	0.0362
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.261E+00	0.7370
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-01	0.0342
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.901E-01	0.0342
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.044E-01	0.1065
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.925E-02	0.0093
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-01	0.0297
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.102E-01	0.0130
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.495E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.034E-02	0.0012	2.894E-03	0.0003	0.000E+00	0.0000	2.415E-01	0.0284	8.179E-04	0.0001	1.165E-04	0.0000	5.155E-02	0.0061
Np-237	2.549E-01	0.0300	3.525E-03	0.0004	0.000E+00	0.0000	5.904E+00	0.6954	2.987E-02	0.0035	9.775E-04	0.0001	6.302E-02	0.0074
Pu-239	6.923E-05	0.0000	2.803E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0277	1.595E-03	0.0002	5.622E-05	0.0000	5.025E-02	0.0059
Pu-240	3.590E-05	0.0000	2.802E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0277	1.594E-03	0.0002	5.621E-05	0.0000	5.024E-02	0.0059
Tc-99	2.956E-05	0.0000	5.434E-08	0.0000	0.000E+00	0.0000	8.998E-01	0.1060	1.574E-04	0.0000	4.279E-03	0.0005	2.072E-05	0.0000
U-234	9.544E-05	0.0000	8.623E-04	0.0001	0.000E+00	0.0000	6.963E-02	0.0082	1.773E-03	0.0002	2.868E-03	0.0003	4.017E-03	0.0005
U-235	1.775E-01	0.0209	8.038E-04	0.0001	0.000E+00	0.0000	6.600E-02	0.0078	1.675E-03	0.0002	2.709E-03	0.0003	3.800E-03	0.0004
U-238	3.506E-02	0.0041	7.711E-04	0.0001	0.000E+00	0.0000	6.611E-02	0.0078	1.684E-03	0.0002	2.723E-03	0.0003	3.814E-03	0.0004
Total	4.781E-01	0.0563	1.446E-02	0.0017	0.000E+00	0.0000	7.718E+00	0.9090	3.916E-02	0.0046	1.379E-02	0.0016	2.267E-01	0.0267

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.072E-01	0.0362
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.257E+00	0.7369
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-01	0.0342
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.901E-01	0.0342
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.043E-01	0.1065
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.924E-02	0.0093
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.525E-01	0.0297
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.102E-01	0.0130
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.490E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.031E-02	0.0012	2.885E-03	0.0003	0.000E+00	0.0000	2.407E-01	0.0284	8.153E-04	0.0001	1.161E-04	0.0000	5.138E-02	0.0061
Np-237	2.546E-01	0.0300	3.520E-03	0.0004	0.000E+00	0.0000	5.897E+00	0.6953	2.983E-02	0.0035	9.763E-04	0.0001	6.294E-02	0.0074
Pu-239	6.922E-05	0.0000	2.802E-03	0.0003	0.000E+00	0.0000	2.354E-01	0.0278	1.594E-03	0.0002	5.621E-05	0.0000	5.025E-02	0.0059
Pu-240	3.590E-05	0.0000	2.802E-03	0.0003	0.000E+00	0.0000	2.353E-01	0.0277	1.594E-03	0.0002	5.620E-05	0.0000	5.023E-02	0.0059
Tc-99	2.955E-05	0.0000	5.433E-08	0.0000	0.000E+00	0.0000	8.995E-01	0.1061	1.573E-04	0.0000	4.278E-03	0.0005	2.071E-05	0.0000
U-234	9.548E-05	0.0000	8.622E-04	0.0001	0.000E+00	0.0000	6.962E-02	0.0082	1.773E-03	0.0002	2.867E-03	0.0003	4.017E-03	0.0005
U-235	1.775E-01	0.0209	8.042E-04	0.0001	0.000E+00	0.0000	6.629E-02	0.0078	1.675E-03	0.0002	2.709E-03	0.0003	3.806E-03	0.0004
U-238	3.506E-02	0.0041	7.710E-04	0.0001	0.000E+00	0.0000	6.610E-02	0.0078	1.683E-03	0.0002	2.723E-03	0.0003	3.814E-03	0.0004
Total	4.777E-01	0.0563	1.445E-02	0.0017	0.000E+00	0.0000	7.710E+00	0.9090	3.912E-02	0.0046	1.378E-02	0.0016	2.265E-01	0.0267

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.062E-01	0.0361
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.249E+00	0.7368
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.902E-01	0.0342
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.900E-01	0.0342
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.040E-01	0.1066
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.923E-02	0.0093
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.528E-01	0.0298
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.102E-01	0.0130
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.481E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.020E-02	0.0012	2.852E-03	0.0003	0.000E+00	0.0000	2.380E-01	0.0282	8.062E-04	0.0001	1.148E-04	0.0000	5.081E-02	0.0060
Np-237	2.534E-01	0.0300	3.504E-03	0.0004	0.000E+00	0.0000	5.870E+00	0.6947	2.969E-02	0.0035	9.719E-04	0.0001	6.265E-02	0.0074
Pu-239	6.920E-05	0.0000	2.802E-03	0.0003	0.000E+00	0.0000	2.353E-01	0.0279	1.594E-03	0.0002	5.620E-05	0.0000	5.023E-02	0.0059
Pu-240	3.586E-05	0.0000	2.799E-03	0.0003	0.000E+00	0.0000	2.351E-01	0.0278	1.593E-03	0.0002	5.615E-05	0.0000	5.019E-02	0.0059
Tc-99	2.952E-05	0.0000	5.427E-08	0.0000	0.000E+00	0.0000	8.985E-01	0.1064	1.571E-04	0.0000	4.273E-03	0.0005	2.069E-05	0.0000
U-234	9.595E-05	0.0000	8.620E-04	0.0001	0.000E+00	0.0000	6.959E-02	0.0082	1.772E-03	0.0002	2.866E-03	0.0003	4.015E-03	0.0005
U-235	1.775E-01	0.0210	8.064E-04	0.0001	0.000E+00	0.0000	6.733E-02	0.0080	1.674E-03	0.0002	2.708E-03	0.0003	3.833E-03	0.0005
U-238	3.504E-02	0.0041	7.706E-04	0.0001	0.000E+00	0.0000	6.607E-02	0.0078	1.683E-03	0.0002	2.721E-03	0.0003	3.812E-03	0.0005
Total	4.763E-01	0.0564	1.440E-02	0.0017	0.000E+00	0.0000	7.680E+00	0.9090	3.897E-02	0.0046	1.377E-02	0.0016	2.256E-01	0.0267

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.028E-01	0.0358
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.220E+00	0.7362
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.901E-01	0.0343
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.898E-01	0.0343
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.030E-01	0.1069
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.920E-02	0.0094
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.538E-01	0.0300
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.101E-01	0.0130
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.449E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.876E-03	0.0012	2.762E-03	0.0003	0.000E+00	0.0000	2.306E-01	0.0276	7.809E-04	0.0001	1.112E-04	0.0000	4.920E-02	0.0059
Np-237	2.501E-01	0.0299	3.459E-03	0.0004	0.000E+00	0.0000	5.794E+00	0.6932	2.931E-02	0.0035	9.595E-04	0.0001	6.184E-02	0.0074
Pu-239	6.915E-05	0.0000	2.799E-03	0.0003	0.000E+00	0.0000	2.351E-01	0.0281	1.593E-03	0.0002	5.615E-05	0.0000	5.019E-02	0.0060
Pu-240	3.578E-05	0.0000	2.793E-03	0.0003	0.000E+00	0.0000	2.346E-01	0.0281	1.589E-03	0.0002	5.602E-05	0.0000	5.007E-02	0.0060
Tc-99	2.942E-05	0.0000	5.409E-08	0.0000	0.000E+00	0.0000	8.957E-01	0.1072	1.566E-04	0.0000	4.260E-03	0.0005	2.063E-05	0.0000
U-234	9.996E-05	0.0000	8.611E-04	0.0001	0.000E+00	0.0000	6.951E-02	0.0083	1.770E-03	0.0002	2.862E-03	0.0003	4.011E-03	0.0005
U-235	1.773E-01	0.0212	8.175E-04	0.0001	0.000E+00	0.0000	7.042E-02	0.0084	1.673E-03	0.0002	2.705E-03	0.0003	3.933E-03	0.0005
U-238	3.500E-02	0.0042	7.697E-04	0.0001	0.000E+00	0.0000	6.599E-02	0.0079	1.681E-03	0.0002	2.718E-03	0.0003	3.807E-03	0.0005
Total	4.726E-01	0.0565	1.426E-02	0.0017	0.000E+00	0.0000	7.595E+00	0.9088	3.855E-02	0.0046	1.373E-02	0.0016	2.231E-01	0.0267

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.933E-01	0.0351
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.139E+00	0.7346
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.898E-01	0.0347
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.891E-01	0.0346
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.002E-01	0.1077
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.911E-02	0.0095
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.569E-01	0.0307
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.100E-01	0.0132
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.358E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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June 21, 2011

Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.831E-03	0.0011	2.469E-03	0.0003	0.000E+00	0.0000	2.062E-01	0.0256	6.985E-04	0.0001	9.941E-05	0.0000	4.397E-02	0.0055
Np-237	2.389E-01	0.0297	3.304E-03	0.0004	0.000E+00	0.0000	5.535E+00	0.6875	2.800E-02	0.0035	9.175E-04	0.0001	5.907E-02	0.0073
Pu-239	6.896E-05	0.0000	2.791E-03	0.0003	0.000E+00	0.0000	2.344E-01	0.0291	1.588E-03	0.0002	5.598E-05	0.0000	5.004E-02	0.0062
Pu-240	3.548E-05	0.0000	2.769E-03	0.0003	0.000E+00	0.0000	2.326E-01	0.0289	1.576E-03	0.0002	5.556E-05	0.0000	4.965E-02	0.0062
Tc-99	2.910E-05	0.0000	5.350E-08	0.0000	0.000E+00	0.0000	8.858E-01	0.1100	1.549E-04	0.0000	4.213E-03	0.0005	2.040E-05	0.0000
U-234	1.450E-04	0.0000	8.583E-04	0.0001	0.000E+00	0.0000	6.933E-02	0.0086	1.762E-03	0.0002	2.850E-03	0.0004	3.998E-03	0.0005
U-235	1.771E-01	0.0220	8.810E-04	0.0001	0.000E+00	0.0000	8.173E-02	0.0102	1.667E-03	0.0002	2.694E-03	0.0003	4.400E-03	0.0005
U-238	3.483E-02	0.0043	7.662E-04	0.0001	0.000E+00	0.0000	6.569E-02	0.0082	1.673E-03	0.0002	2.706E-03	0.0003	3.790E-03	0.0005
Total	4.600E-01	0.0571	1.384E-02	0.0017	0.000E+00	0.0000	7.310E+00	0.9081	3.712E-02	0.0046	1.359E-02	0.0017	2.149E-01	0.0267

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.622E-01	0.0326
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.865E+00	0.7286
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.890E-01	0.0359
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.867E-01	0.0356
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.902E-01	0.1106
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.894E-02	0.0098
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.685E-01	0.0334
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.095E-01	0.0136
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.050E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

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Appendix N

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	6.418E-03	0.0009	1.791E-03	0.0002	0.000E+00	0.0000	1.498E-01	0.0206	5.081E-04	0.0001	7.215E-05	0.0000	3.190E-02	0.0044
Np-237	2.097E-01	0.0289	2.900E-03	0.0004	0.000E+00	0.0000	4.857E+00	0.6693	2.457E-02	0.0034	8.075E-04	0.0001	5.184E-02	0.0071
Pu-239	6.841E-05	0.0000	2.767E-03	0.0004	0.000E+00	0.0000	2.324E-01	0.0320	1.574E-03	0.0002	5.551E-05	0.0000	4.962E-02	0.0068
Pu-240	3.464E-05	0.0000	2.704E-03	0.0004	0.000E+00	0.0000	2.271E-01	0.0313	1.538E-03	0.0002	5.426E-05	0.0000	4.848E-02	0.0067
Tc-99	2.819E-05	0.0000	5.183E-08	0.0000	0.000E+00	0.0000	8.582E-01	0.1183	1.501E-04	0.0000	4.081E-03	0.0006	1.976E-05	0.0000
U-234	5.258E-04	0.0001	8.502E-04	0.0001	0.000E+00	0.0000	6.964E-02	0.0096	1.744E-03	0.0002	2.822E-03	0.0004	3.972E-03	0.0005
U-235	1.769E-01	0.0244	1.087E-03	0.0001	0.000E+00	0.0000	1.142E-01	0.0157	1.651E-03	0.0002	2.664E-03	0.0004	5.842E-03	0.0008
U-238	3.437E-02	0.0047	7.565E-04	0.0001	0.000E+00	0.0000	6.486E-02	0.0089	1.652E-03	0.0002	2.672E-03	0.0004	3.742E-03	0.0005
Total	4.280E-01	0.0590	1.286E-02	0.0018	0.000E+00	0.0000	6.573E+00	0.9059	3.339E-02	0.0046	1.323E-02	0.0018	1.954E-01	0.0269

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.905E-01	0.0263
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.146E+00	0.7093
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.865E-01	0.0395
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-01	0.0386
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.625E-01	0.1189
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.956E-02	0.0110
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.024E-01	0.0417
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.081E-01	0.0149
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.256E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.108E-03	0.0001	5.822E-04	0.0000	0.000E+00	0.0000	4.920E-02	0.0032	1.677E-04	0.0000	2.353E-05	0.0000	1.037E-02	0.0007
Np-237	1.328E-01	0.0087	1.840E-03	0.0001	0.000E+00	0.0000	3.074E+00	0.2020	1.556E-02	0.0010	5.180E-04	0.0000	3.283E-02	0.0022
Pu-239	6.652E-05	0.0000	2.686E-03	0.0002	0.000E+00	0.0000	2.256E-01	0.0148	1.528E-03	0.0001	5.388E-05	0.0000	4.816E-02	0.0032
Pu-240	3.186E-05	0.0000	2.486E-03	0.0002	0.000E+00	0.0000	2.088E-01	0.0137	1.415E-03	0.0001	4.995E-05	0.0000	4.458E-02	0.0029
Tc-99	2.523E-05	0.0000	4.639E-08	0.0000	0.000E+00	0.0000	7.682E-01	0.0505	1.343E-04	0.0000	3.653E-03	0.0002	1.769E-05	0.0000
U-234	4.352E-03	0.0003	8.230E-04	0.0001	0.000E+00	0.0000	7.906E-02	0.0052	1.729E-03	0.0001	2.818E-03	0.0002	4.006E-03	0.0003
U-235	1.761E-01	0.0116	1.779E-03	0.0001	0.000E+00	0.0000	2.231E-01	0.0147	1.599E-03	0.0001	2.563E-03	0.0002	1.069E-02	0.0007
U-238	3.280E-02	0.0022	7.235E-04	0.0000	0.000E+00	0.0000	6.203E-02	0.0041	1.580E-03	0.0001	2.555E-03	0.0002	3.579E-03	0.0002
Total	3.482E-01	0.0229	1.092E-02	0.0007	0.000E+00	0.0000	4.690E+00	0.3082	2.371E-02	0.0016	1.223E-02	0.0008	1.542E-01	0.0101

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.224E-03	0.0001	4.659E-05	0.0000	0.000E+00	0.0000	5.664E-05	0.0000	1.260E-06	0.0000	1.058E-07	0.0000	6.378E-02	0.0042
Np-237	9.192E+00	0.6040	3.499E-01	0.0230	0.000E+00	0.0000	4.254E-01	0.0280	9.466E-03	0.0006	7.955E-04	0.0001	1.323E+01	0.8697
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.781E-01	0.0183
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.574E-01	0.0169
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.720E-01	0.0507
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.278E-02	0.0061
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.158E-01	0.0273
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E-01	0.0068
Total	9.193E+00	0.6041	3.500E-01	0.0230	0.000E+00	0.0000	4.255E-01	0.0280	9.467E-03	0.0006	7.956E-04	0.0001	1.522E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.077E-01	3.072E-01	3.062E-01	3.028E-01	2.932E-01	2.621E-01	1.901E-01	6.177E-02
Am-241	Np-237+D	1.000E+00	9.582E-07	2.977E-06	7.012E-06	2.099E-05	5.972E-05	1.820E-04	4.356E-04	2.009E-03
Am-241	U-233	1.000E+00	2.596E-14	1.555E-13	7.579E-13	6.444E-12	5.266E-11	5.386E-10	4.132E-09	4.957E-08
Am-241	Th-229+D	1.000E+00	4.655E-18	6.365E-17	7.125E-16	1.843E-14	4.424E-13	1.513E-11	3.592E-10	8.988E-09
Am-241	ΣDSR (j)		3.077E-01	3.072E-01	3.062E-01	3.028E-01	2.933E-01	2.622E-01	1.905E-01	6.378E-02
Np-237+D	Np-237+D	1.000E+00	6.261E+00	6.257E+00	6.249E+00	6.220E+00	6.139E+00	5.865E+00	5.146E+00	1.323E+01
Np-237+D	U-233	1.000E+00	2.193E-07	5.777E-07	1.286E-06	3.758E-06	1.075E-05	3.444E-05	9.581E-05	5.668E-04
Np-237+D	Th-229+D	1.000E+00	5.491E-11	3.583E-10	1.843E-09	1.623E-08	1.355E-07	1.441E-06	1.220E-05	1.131E-04
Np-237+D	ΣDSR (j)		6.261E+00	6.257E+00	6.249E+00	6.220E+00	6.139E+00	5.865E+00	5.146E+00	1.323E+01
Pu-239	Pu-239	1.000E+00	2.902E-01	2.902E-01	2.902E-01	2.901E-01	2.898E-01	2.890E-01	2.865E-01	2.781E-01
Pu-239	U-235+D	1.000E+00	1.227E-10	3.711E-10	8.679E-10	2.606E-09	7.565E-09	2.484E-08	7.346E-08	2.354E-07
Pu-239	Pa-231	1.000E+00	2.376E-14	1.720E-13	9.216E-13	8.303E-12	7.012E-11	7.595E-10	6.729E-09	7.220E-08
Pu-239	Ac-227+D	1.000E+00	7.600E-17	9.138E-16	9.192E-15	2.123E-13	4.357E-12	1.016E-10	1.297E-09	1.607E-08
Pu-239	ΣDSR (j)		2.902E-01	2.902E-01	2.902E-01	2.901E-01	2.898E-01	2.890E-01	2.865E-01	2.781E-01
Pu-240	Pu-240	4.950E-08	1.436E-08	1.436E-08	1.436E-08	1.435E-08	1.431E-08	1.419E-08	1.386E-08	1.274E-08
Pu-240	Pu-240	1.000E+00	2.901E-01	2.901E-01	2.900E-01	2.898E-01	2.891E-01	2.867E-01	2.799E-01	2.574E-01
Pu-240	U-236	1.000E+00	1.068E-09	3.292E-09	7.748E-09	2.333E-08	6.773E-08	2.218E-07	6.512E-07	2.031E-06
Pu-240	Th-232	1.000E+00	6.787E-20	4.304E-19	2.169E-18	1.888E-17	1.576E-16	1.698E-15	1.498E-14	1.589E-13
Pu-240	Ra-228+D	1.000E+00	5.497E-20	8.510E-19	9.660E-18	2.161E-16	3.470E-15	5.312E-14	5.233E-13	5.774E-12
Pu-240	Th-228+D	1.000E+00	1.478E-21	3.862E-20	7.782E-19	3.443E-17	8.134E-16	1.451E-14	1.487E-13	1.662E-12
Pu-240	ΣDSR (j)		2.901E-01	2.901E-01	2.900E-01	2.898E-01	2.891E-01	2.867E-01	2.799E-01	2.574E-01
Tc-99	Tc-99	1.000E+00	9.044E-01	9.043E-01	9.040E-01	9.030E-01	9.002E-01	8.902E-01	8.625E-01	7.720E-01
U-234	U-234	1.000E+00	7.925E-02	7.924E-02	7.923E-02	7.919E-02	7.908E-02	7.870E-02	7.761E-02	7.391E-02
U-234	Th-230	1.000E+00	2.383E-07	6.609E-07	1.501E-06	4.440E-06	1.283E-05	4.209E-05	1.248E-04	4.041E-04
U-234	Ra-226+D	1.000E+00	5.555E-09	4.045E-08	2.174E-07	1.960E-06	1.652E-05	1.774E-04	1.533E-03	1.514E-02
U-234	Pb-210+D	1.000E+00	3.066E-11	3.082E-10	2.630E-09	5.295E-08	1.027E-06	2.338E-05	2.918E-04	3.332E-03
U-234	ΣDSR (j)		7.925E-02	7.924E-02	7.923E-02	7.920E-02	7.911E-02	7.894E-02	7.956E-02	9.278E-02
U-235+D	U-235+D	1.000E+00	2.523E-01	2.523E-01	2.523E-01	2.521E-01	2.518E-01	2.506E-01	2.473E-01	2.360E-01
U-235+D	Pa-231	1.000E+00	7.399E-05	2.272E-04	5.341E-04	1.608E-03	4.671E-03	1.535E-02	4.545E-02	1.463E-01
U-235+D	Ac-227+D	1.000E+00	2.821E-07	1.605E-06	7.508E-06	5.894E-05	4.023E-04	2.551E-03	9.646E-03	3.356E-02
U-235+D	ΣDSR (j)		2.524E-01	2.525E-01	2.528E-01	2.538E-01	2.569E-01	2.685E-01	3.024E-01	4.158E-01
U-238	U-238	5.400E-05	3.852E-06	3.852E-06	3.852E-06	3.850E-06	3.845E-06	3.827E-06	3.776E-06	3.603E-06
U-238+D	U-238+D	9.999E-01	1.102E-01	1.102E-01	1.101E-01	1.101E-01	1.099E-01	1.094E-01	1.080E-01	1.030E-01
U-238+D	U-234	9.999E-01	1.123E-07	3.370E-07	7.861E-07	2.357E-06	6.838E-06	2.242E-05	6.614E-05	2.099E-04
U-238+D	Th-230	9.999E-01	2.407E-13	1.519E-12	7.647E-12	6.658E-11	5.558E-10	5.994E-09	5.302E-08	5.679E-07
U-238+D	Ra-226+D	9.999E-01	3.852E-15	6.062E-14	7.240E-13	1.943E-11	4.761E-10	1.688E-08	4.387E-07	1.467E-05
U-238+D	Pb-210+D	9.999E-01	1.971E-17	4.087E-16	7.323E-15	4.185E-13	2.357E-11	1.877E-09	7.649E-08	3.131E-06
U-238+D	ΣDSR (j)		1.102E-01	1.102E-01	1.101E-01	1.101E-01	1.100E-01	1.095E-01	1.080E-01	1.033E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Summary : Hematite - Uniform CSM - AF 3,000 m²

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Appendix N

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide

(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241		8.125E+01	8.138E+01	8.164E+01	8.256E+01	8.524E+01	9.533E+01	1.312E+02	3.920E+02
Np-237		3.993E+00	3.996E+00	4.001E+00	4.019E+00	4.072E+00	4.263E+00	4.858E+00	1.889E+00
Pu-239		8.615E+01	8.615E+01	8.616E+01	8.619E+01	8.626E+01	8.652E+01	8.726E+01	8.989E+01
Pu-240		8.616E+01	8.617E+01	8.619E+01	8.627E+01	8.647E+01	8.720E+01	8.931E+01	9.712E+01
Tc-99		2.764E+01	2.765E+01	2.765E+01	2.769E+01	2.777E+01	2.808E+01	2.899E+01	3.238E+01
U-234		3.155E+02	3.155E+02	3.155E+02	3.157E+02	3.160E+02	3.167E+02	3.142E+02	2.694E+02
U-235		9.906E+01	9.900E+01	9.889E+01	9.850E+01	9.732E+01	9.310E+01	8.267E+01	6.012E+01
U-238		2.269E+02	2.269E+02	2.270E+02	2.271E+02	2.274E+02	2.284E+02	2.314E+02	2.421E+02

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 595 ± 1 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+00	0.000E+00	3.077E-01	8.125E+01	1.195E-01	2.093E+02
Np-237	1.000E+00	595 ± 1	1.773E+01	1.410E+00	1.773E+01	1.410E+00
Pu-239	1.000E+00	0.000E+00	2.902E-01	8.615E+01	2.829E-01	8.836E+01
Pu-240	1.000E+00	0.000E+00	2.901E-01	8.616E+01	2.702E-01	9.253E+01
Tc-99	1.000E+00	0.000E+00	9.044E-01	2.764E+01	8.231E-01	3.037E+01
U-234	1.000E+00	1.000E+03	9.278E-02	2.694E+02	8.321E-02	3.004E+02
U-235	1.000E+00	1.000E+03	4.158E-01	6.012E+01	3.512E-01	7.119E+01
U-238	1.000E+00	0.000E+00	1.102E-01	2.269E+02	1.060E-01	2.358E+02

Summary : Hematite - Uniform CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.077E-01	3.072E-01	3.062E-01	3.028E-01	2.932E-01	2.621E-01	1.901E-01	6.177E-02
Np-237	Am-241	1.000E+00	9.582E-07	2.977E-06	7.012E-06	2.099E-05	5.972E-05	1.820E-04	4.356E-04	2.009E-03
Np-237	Np-237	1.000E+00	6.261E+00	6.257E+00	6.249E+00	6.220E+00	6.139E+00	5.865E+00	5.146E+00	1.323E+01
Np-237	ΣDOSE (j)		6.261E+00	6.257E+00	6.249E+00	6.220E+00	6.139E+00	5.865E+00	5.147E+00	1.324E+01
U-233	Am-241	1.000E+00	2.596E-14	1.555E-13	7.579E-13	6.444E-12	5.266E-11	5.386E-10	4.132E-09	4.957E-08
U-233	Np-237	1.000E+00	2.193E-07	5.777E-07	1.286E-06	3.758E-06	1.075E-05	3.444E-05	9.581E-05	5.668E-04
U-233	ΣDOSE (j)		2.193E-07	5.777E-07	1.286E-06	3.758E-06	1.075E-05	3.444E-05	9.582E-05	5.669E-04
Th-229	Am-241	1.000E+00	4.655E-18	6.365E-17	7.125E-16	1.843E-14	4.424E-13	1.513E-11	3.592E-10	8.988E-09
Th-229	Np-237	1.000E+00	5.491E-11	3.583E-10	1.843E-09	1.623E-08	1.355E-07	1.441E-06	1.220E-05	1.131E-04
Th-229	ΣDOSE (j)		5.491E-11	3.583E-10	1.843E-09	1.623E-08	1.355E-07	1.441E-06	1.220E-05	1.131E-04
Pu-239	Pu-239	1.000E+00	2.902E-01	2.902E-01	2.902E-01	2.901E-01	2.898E-01	2.890E-01	2.865E-01	2.781E-01
U-235	Pu-239	1.000E+00	1.227E-10	3.711E-10	8.679E-10	2.606E-09	7.565E-09	2.484E-08	7.346E-08	2.354E-07
U-235	U-235	1.000E+00	2.523E-01	2.523E-01	2.523E-01	2.521E-01	2.518E-01	2.506E-01	2.473E-01	2.360E-01
U-235	ΣDOSE (j)		2.523E-01	2.523E-01	2.523E-01	2.521E-01	2.518E-01	2.506E-01	2.473E-01	2.360E-01
Pa-231	Pu-239	1.000E+00	2.376E-14	1.720E-13	9.216E-13	8.303E-12	7.012E-11	7.595E-10	6.729E-09	7.220E-08
Pa-231	U-235	1.000E+00	7.399E-05	2.272E-04	5.341E-04	1.608E-03	4.671E-03	1.535E-02	4.545E-02	1.463E-01
Pa-231	ΣDOSE (j)		7.399E-05	2.272E-04	5.341E-04	1.608E-03	4.671E-03	1.535E-02	4.545E-02	1.463E-01
Ac-227	Pu-239	1.000E+00	7.600E-17	9.138E-16	9.192E-15	2.123E-13	4.357E-12	1.016E-10	1.297E-09	1.607E-08
Ac-227	U-235	1.000E+00	2.821E-07	1.605E-06	7.508E-06	5.894E-05	4.023E-04	2.551E-03	9.646E-03	3.356E-02
Ac-227	ΣDOSE (j)		2.821E-07	1.605E-06	7.508E-06	5.894E-05	4.023E-04	2.551E-03	9.646E-03	3.356E-02
Pu-240	Pu-240	4.950E-08	1.436E-08	1.436E-08	1.436E-08	1.435E-08	1.431E-08	1.419E-08	1.386E-08	1.274E-08
Pu-240	Pu-240	1.000E+00	2.901E-01	2.901E-01	2.900E-01	2.898E-01	2.891E-01	2.867E-01	2.799E-01	2.574E-01
Pu-240	ΣDOSE (j)		2.901E-01	2.901E-01	2.900E-01	2.898E-01	2.891E-01	2.867E-01	2.799E-01	2.574E-01
U-236	Pu-240	1.000E+00	1.068E-09	3.292E-09	7.748E-09	2.333E-08	6.773E-08	2.218E-07	6.512E-07	2.031E-06
Th-232	Pu-240	1.000E+00	6.787E-20	4.304E-19	2.169E-18	1.888E-17	1.576E-16	1.698E-15	1.498E-14	1.589E-13
Ra-228	Pu-240	1.000E+00	5.497E-20	8.510E-19	9.660E-18	2.161E-16	3.470E-15	5.312E-14	5.233E-13	5.774E-12
Th-228	Pu-240	1.000E+00	1.478E-21	3.862E-20	7.782E-19	3.443E-17	8.134E-16	1.451E-14	1.487E-13	1.662E-12
Tc-99	Tc-99	1.000E+00	9.044E-01	9.043E-01	9.040E-01	9.030E-01	9.002E-01	8.902E-01	8.625E-01	7.720E-01
U-234	U-234	1.000E+00	7.925E-02	7.924E-02	7.923E-02	7.919E-02	7.908E-02	7.870E-02	7.761E-02	7.391E-02
U-234	U-238	9.999E-01	1.123E-07	3.370E-07	7.861E-07	2.357E-06	6.838E-06	2.242E-05	6.614E-05	2.099E-04
U-234	ΣDOSE (j)		7.925E-02	7.924E-02	7.923E-02	7.919E-02	7.909E-02	7.872E-02	7.767E-02	7.412E-02
Th-230	U-234	1.000E+00	2.383E-07	6.609E-07	1.501E-06	4.440E-06	1.283E-05	4.209E-05	1.248E-04	4.041E-04
Th-230	U-238	9.999E-01	2.407E-13	1.519E-12	7.647E-12	6.658E-11	5.558E-10	5.994E-09	5.302E-08	5.679E-07
Th-230	ΣDOSE (j)		2.383E-07	6.609E-07	1.501E-06	4.440E-06	1.283E-05	4.209E-05	1.248E-04	4.047E-04

Summary : Hematite - Uniform CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	5.555E-09	4.045E-08	2.174E-07	1.960E-06	1.652E-05	1.774E-04	1.533E-03	1.514E-02
Ra-226	U-238	9.999E-01	3.852E-15	6.062E-14	7.240E-13	1.943E-11	4.761E-10	1.688E-08	4.387E-07	1.467E-05
Ra-226	ΣDOSE(j)		5.555E-09	4.045E-08	2.174E-07	1.960E-06	1.652E-05	1.774E-04	1.534E-03	1.515E-02
Pb-210	U-234	1.000E+00	3.066E-11	3.082E-10	2.630E-09	5.295E-08	1.027E-06	2.338E-05	2.918E-04	3.332E-03
Pb-210	U-238	9.999E-01	1.971E-17	4.087E-16	7.323E-15	4.185E-13	2.357E-11	1.877E-09	7.649E-08	3.131E-06
Pb-210	ΣDOSE(j)		3.066E-11	3.082E-10	2.630E-09	5.295E-08	1.027E-06	2.338E-05	2.919E-04	3.335E-03
U-238	U-238	5.400E-05	3.852E-06	3.852E-06	3.852E-06	3.850E-06	3.845E-06	3.827E-06	3.776E-06	3.603E-06
U-238	U-238	9.999E-01	1.102E-01	1.102E-01	1.101E-01	1.101E-01	1.099E-01	1.094E-01	1.080E-01	1.030E-01
U-238	ΣDOSE(j)		1.102E-01	1.102E-01	1.102E-01	1.101E-01	1.100E-01	1.094E-01	1.080E-01	1.030E-01

THF(i) is the thread fraction of the parent nuclide.

Summary : Hematite - Uniform CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+00	9.984E-01	9.952E-01	9.841E-01	9.530E-01	8.517E-01	6.177E-01	2.007E-01
Np-237	Am-241	1.000E+00	0.000E+00	3.235E-07	9.684E-07	3.203E-06	9.394E-06	2.894E-05	6.948E-05	1.087E-04
Np-237	Np-237	1.000E+00	1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.367E-01	8.220E-01	5.203E-01
Np-237	ΣS(j):		1.000E+00	9.993E-01	9.980E-01	9.935E-01	9.806E-01	9.368E-01	8.221E-01	5.204E-01
U-233	Am-241	1.000E+00	0.000E+00	7.077E-13	6.359E-12	7.028E-11	6.228E-10	6.556E-09	5.072E-08	3.419E-07
U-233	Np-237	1.000E+00	0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
U-233	ΣS(j):		0.000E+00	4.372E-06	1.311E-05	4.357E-05	1.298E-04	4.218E-04	1.178E-03	3.087E-03
Th-229	Am-241	1.000E+00	0.000E+00	2.228E-17	6.008E-16	2.216E-14	5.911E-13	2.099E-11	5.036E-10	1.261E-08
Th-229	Np-237	1.000E+00	0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Th-229	ΣS(j):		0.000E+00	2.064E-10	1.857E-09	2.059E-08	1.843E-07	2.009E-06	1.714E-05	1.585E-04
Pu-239	Pu-239	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.987E-01	9.958E-01	9.873E-01	9.584E-01
U-235	Pu-239	1.000E+00	0.000E+00	9.848E-10	2.954E-09	9.843E-09	2.950E-08	9.795E-08	2.906E-07	9.325E-07
U-235	U-235	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
U-235	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-14	9.376E-14	1.041E-12	9.364E-12	1.037E-10	9.247E-10	9.945E-09
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Pa-231	ΣS(j):		0.000E+00	2.116E-05	6.347E-05	2.115E-04	6.338E-04	2.106E-03	6.256E-03	2.016E-02
Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-16	2.915E-15	1.023E-13	2.387E-12	5.820E-11	7.518E-10	9.347E-09
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Ac-227	ΣS(j):		0.000E+00	3.332E-07	2.937E-06	3.036E-05	2.256E-04	1.472E-03	5.605E-03	1.954E-02
Pu-240	Pu-240	4.950E-08	4.950E-08	4.949E-08	4.948E-08	4.944E-08	4.932E-08	4.891E-08	4.775E-08	4.391E-08
Pu-240	Pu-240	1.000E+00	1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
Pu-240	ΣS(j):		1.000E+00	9.999E-01	9.996E-01	9.988E-01	9.964E-01	9.881E-01	9.647E-01	8.871E-01
U-236	Pu-240	1.000E+00	0.000E+00	2.960E-08	8.878E-08	2.958E-07	8.856E-07	2.933E-06	8.636E-06	2.697E-05
Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-19	6.571E-18	7.298E-17	6.560E-16	7.257E-15	6.450E-14	6.863E-13
Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-20	7.254E-19	2.226E-17	3.909E-16	6.155E-15	6.106E-14	6.753E-13
Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-21	1.634E-19	1.165E-17	3.134E-16	5.800E-15	5.993E-14	6.717E-13
Tc-99	Tc-99	1.000E+00	1.000E+00	9.998E-01	9.995E-01	9.984E-01	9.953E-01	9.843E-01	9.536E-01	8.536E-01
U-234	U-234	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.979E-01	9.931E-01	9.793E-01	9.326E-01
U-234	U-238	9.999E-01	0.000E+00	2.835E-06	8.503E-06	2.833E-05	8.487E-05	2.816E-04	8.332E-04	2.648E-03
U-234	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01
Th-230	U-234	1.000E+00	0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.966E-04	2.669E-03	8.655E-03
Th-230	U-238	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.275E-09	1.147E-08	1.270E-07	1.132E-06	1.215E-05
Th-230	ΣS(j):		0.000E+00	9.002E-06	2.700E-05	8.998E-05	2.697E-04	8.968E-04	2.670E-03	8.667E-03

Summary : Hematite - Uniform CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.650E-03
Ra-226	U-238	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.953E-11	1.816E-09	4.764E-08	1.598E-06
Ra-226	ΣS(j):		0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.746E-06	1.917E-05	1.668E-04	1.652E-03
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.553E-03
Pb-210	U-238	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.694E-12	8.458E-10	3.534E-08	1.458E-06
Pb-210	ΣS(j):		0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.369E-07	1.065E-05	1.353E-04	1.555E-03
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.399E-05	5.396E-05	5.389E-05	5.364E-05	5.293E-05	5.051E-05
U-238	U-238	9.999E-01	9.999E-01	9.999E-01	9.997E-01	9.993E-01	9.979E-01	9.933E-01	9.801E-01	9.352E-01
U-238	ΣS(j):		1.000E+00	9.999E-01	9.998E-01	9.993E-01	9.980E-01	9.933E-01	9.801E-01	9.353E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 3.25 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Appendix N

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

Maximum TDOSE(t): 2.883E-01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.763E-04	0.0006	6.157E-05	0.0002	0.000E+00	0.0000	1.906E-03	0.0066	9.276E-06	0.0000	1.217E-05	0.0000	1.017E-04	0.0004
Ra-226	2.794E-01	0.9691	2.412E-05	0.0001	0.000E+00	0.0000	6.560E-03	0.0228	5.978E-06	0.0000	1.742E-05	0.0001	2.034E-05	0.0001
Total	2.795E-01	0.9698	8.569E-05	0.0003	0.000E+00	0.0000	8.466E-03	0.0294	1.525E-05	0.0001	2.959E-05	0.0001	1.220E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.267E-03	0.0079
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.860E-01	0.9921
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.883E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.709E-04	0.0006	5.968E-05	0.0002	0.000E+00	0.0000	1.847E-03	0.0064	8.992E-06	0.0000	1.180E-05	0.0000	9.859E-05	0.0003
Ra-226	2.793E-01	0.9691	2.600E-05	0.0001	0.000E+00	0.0000	6.618E-03	0.0230	6.267E-06	0.0000	1.779E-05	0.0001	2.344E-05	0.0001
Total	2.794E-01	0.9697	8.568E-05	0.0003	0.000E+00	0.0000	8.466E-03	0.0294	1.526E-05	0.0001	2.959E-05	0.0001	1.220E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.197E-03	0.0076
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.859E-01	0.9924
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.881E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.606E-04	0.0006	5.608E-05	0.0002	0.000E+00	0.0000	1.736E-03	0.0060	8.450E-06	0.0000	1.108E-05	0.0000	9.264E-05	0.0003
Ra-226	2.790E-01	0.9692	2.957E-05	0.0001	0.000E+00	0.0000	6.724E-03	0.0234	6.804E-06	0.0000	1.849E-05	0.0001	2.936E-05	0.0001
Total	2.792E-01	0.9697	8.565E-05	0.0003	0.000E+00	0.0000	8.460E-03	0.0294	1.525E-05	0.0001	2.957E-05	0.0001	1.220E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.065E-03	0.0072
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.858E-01	0.9928
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.879E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.291E-04	0.0004	4.510E-05	0.0002	0.000E+00	0.0000	1.396E-03	0.0049	6.796E-06	0.0000	8.915E-06	0.0000	7.451E-05	0.0003
Ra-226	2.782E-01	0.9693	4.043E-05	0.0001	0.000E+00	0.0000	7.042E-03	0.0245	8.432E-06	0.0000	2.060E-05	0.0001	4.735E-05	0.0002
Total	2.783E-01	0.9697	8.553E-05	0.0003	0.000E+00	0.0000	8.439E-03	0.0294	1.523E-05	0.0001	2.951E-05	0.0001	1.219E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.661E-03	0.0058
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.854E-01	0.9942
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.870E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.932E-05	0.0002	2.421E-05	0.0001	0.000E+00	0.0000	7.494E-04	0.0026	3.648E-06	0.0000	4.785E-06	0.0000	3.999E-05	0.0001
Ra-226	2.759E-01	0.9694	6.085E-05	0.0002	0.000E+00	0.0000	7.624E-03	0.0268	1.149E-05	0.0000	2.452E-05	0.0001	8.126E-05	0.0003
Total	2.759E-01	0.9697	8.506E-05	0.0003	0.000E+00	0.0000	8.374E-03	0.0294	1.514E-05	0.0001	2.931E-05	0.0001	1.213E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.913E-04	0.0031
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.837E-01	0.9969
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.845E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.852E-06	0.0000	2.742E-06	0.0000	0.000E+00	0.0000	8.489E-05	0.0003	4.132E-07	0.0000	5.421E-07	0.0000	4.530E-06	0.0000
Ra-226	2.676E-01	0.9696	8.004E-05	0.0003	0.000E+00	0.0000	8.046E-03	0.0292	1.431E-05	0.0001	2.794E-05	0.0001	1.135E-04	0.0004
Total	2.676E-01	0.9697	8.278E-05	0.0003	0.000E+00	0.0000	8.131E-03	0.0295	1.472E-05	0.0001	2.848E-05	0.0001	1.181E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.010E-04	0.0004
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.759E-01	0.9996
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.760E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.558E-08	0.0000	5.441E-09	0.0000	0.000E+00	0.0000	1.684E-07	0.0000	8.199E-10	0.0000	1.076E-09	0.0000	8.989E-09	0.0000
Ra-226	2.453E-01	0.9697	7.591E-05	0.0003	0.000E+00	0.0000	7.454E-03	0.0295	1.350E-05	0.0001	2.612E-05	0.0001	1.083E-04	0.0004
Total	2.453E-01	0.9697	7.592E-05	0.0003	0.000E+00	0.0000	7.455E-03	0.0295	1.350E-05	0.0001	2.612E-05	0.0001	1.083E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.003E-07	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.530E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.530E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.421E-18	0.0000	1.893E-18	0.0000	0.000E+00	0.0000	5.861E-17	0.0000	2.853E-19	0.0000	3.742E-19	0.0000	3.128E-18	0.0000
Ra-226	1.809E-01	0.9697	5.599E-05	0.0003	0.000E+00	0.0000	5.498E-03	0.0295	9.958E-06	0.0001	1.926E-05	0.0001	7.986E-05	0.0004
Total	1.809E-01	0.9697	5.599E-05	0.0003	0.000E+00	0.0000	5.498E-03	0.0295	9.958E-06	0.0001	1.926E-05	0.0001	7.986E-05	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.971E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.866E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.866E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	2.267E-03	2.197E-03	2.065E-03	1.661E-03	8.913E-04	1.010E-04	2.003E-07	6.971E-17
Ra-226+D	Ra-226+D	1.000E+00	2.859E-01	2.858E-01	2.856E-01	2.847E-01	2.822E-01	2.738E-01	2.509E-01	1.851E-01
Ra-226+D	Pb-210+D	1.000E+00	6.710E-05	1.393E-04	2.716E-04	6.738E-04	1.433E-03	2.164E-03	2.077E-03	1.532E-03
Ra-226+D	ΣDSR(j)		2.860E-01	2.859E-01	2.858E-01	2.854E-01	2.837E-01	2.759E-01	2.530E-01	1.866E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.103E+04	1.138E+04	1.211E+04	1.505E+04	2.805E+04	2.476E+05	1.248E+08	*7.634E+13	
Ra-226	8.741E+01	8.743E+01	8.746E+01	8.761E+01	8.813E+01	9.061E+01	9.881E+01	1.340E+02	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	2.267E-03	1.103E+04	2.267E-03	1.103E+04
Ra-226	1.000E+00	0.000E+00	2.860E-01	8.741E+01	2.860E-01	8.741E+01

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	2.267E-03	2.197E-03	2.065E-03	1.661E-03	8.913E-04	1.010E-04	2.003E-07	6.971E-17
Pb-210	Ra-226	1.000E+00	6.710E-05	1.393E-04	2.716E-04	6.738E-04	1.433E-03	2.164E-03	2.077E-03	1.532E-03
Pb-210	ΣDOSE(j)		2.334E-03	2.337E-03	2.336E-03	2.334E-03	2.324E-03	2.265E-03	2.077E-03	1.532E-03
Ra-226	Ra-226	1.000E+00	2.859E-01	2.858E-01	2.856E-01	2.847E-01	2.822E-01	2.738E-01	2.509E-01	1.851E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.44 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Initial Soil Concentrations, pCi/g

Pb-210	1.000E+00

Ra-226	1.000E+00

Cover Depth: 0.00 meters

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

M(t): 5.528E-02 5.526E-02 5.521E-02 5.504E-02 5.457E-02 5.294E-02 4.853E-02 3.579E-02

Maximum TDOSE(t): 1.382E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.534E-04	0.0005	7.974E-05	0.0001	0.000E+00	0.0000	1.906E-02	0.0138	9.276E-05	0.0001	1.217E-04	0.0001	1.017E-03	0.0007
Ra-226	1.295E+00	0.9369	3.125E-05	0.0000	0.000E+00	0.0000	6.560E-02	0.0475	5.978E-05	0.0000	1.742E-04	0.0001	2.034E-04	0.0001
Total	1.296E+00	0.9375	1.110E-04	0.0001	0.000E+00	0.0000	8.466E-02	0.0613	1.525E-04	0.0001	2.959E-04	0.0002	1.220E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.112E-02	0.0153
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.361E+00	0.9847
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.382E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.303E-04	0.0005	7.730E-05	0.0001	0.000E+00	0.0000	1.847E-02	0.0134	8.992E-05	0.0001	1.180E-04	0.0001	9.859E-04	0.0007
Ra-226	1.294E+00	0.9369	3.367E-05	0.0000	0.000E+00	0.0000	6.618E-02	0.0479	6.267E-05	0.0000	1.779E-04	0.0001	2.344E-04	0.0002
Total	1.295E+00	0.9374	1.110E-04	0.0001	0.000E+00	0.0000	8.466E-02	0.0613	1.526E-04	0.0001	2.959E-04	0.0002	1.220E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.048E-02	0.0148
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.361E+00	0.9852
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.381E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.863E-04	0.0005	7.264E-05	0.0001	0.000E+00	0.0000	1.736E-02	0.0126	8.450E-05	0.0001	1.108E-04	0.0001	9.264E-04	0.0007
Ra-226	1.293E+00	0.9369	3.830E-05	0.0000	0.000E+00	0.0000	6.724E-02	0.0487	6.804E-05	0.0000	1.849E-04	0.0001	2.936E-04	0.0002
Total	1.294E+00	0.9374	1.109E-04	0.0001	0.000E+00	0.0000	8.460E-02	0.0613	1.525E-04	0.0001	2.957E-04	0.0002	1.220E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.924E-02	0.0139
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.361E+00	0.9861
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.520E-04	0.0004	5.842E-05	0.0000	0.000E+00	0.0000	1.396E-02	0.0101	6.796E-05	0.0000	8.915E-05	0.0001	7.451E-04	0.0005
Ra-226	1.289E+00	0.9370	5.236E-05	0.0000	0.000E+00	0.0000	7.042E-02	0.0512	8.432E-05	0.0001	2.060E-04	0.0001	4.735E-04	0.0003
Total	1.290E+00	0.9374	1.108E-04	0.0001	0.000E+00	0.0000	8.439E-02	0.0613	1.523E-04	0.0001	2.951E-04	0.0002	1.219E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.547E-02	0.0112
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.361E+00	0.9888
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.376E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.963E-04	0.0002	3.136E-05	0.0000	0.000E+00	0.0000	7.494E-03	0.0055	3.648E-05	0.0000	4.785E-05	0.0000	3.999E-04	0.0003
Ra-226	1.278E+00	0.9371	7.882E-05	0.0001	0.000E+00	0.0000	7.624E-02	0.0559	1.149E-04	0.0001	2.452E-04	0.0002	8.126E-04	0.0006
Total	1.279E+00	0.9373	1.102E-04	0.0001	0.000E+00	0.0000	8.374E-02	0.0614	1.514E-04	0.0001	2.931E-04	0.0002	1.213E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.306E-03	0.0061
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.356E+00	0.9939
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.364E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.356E-05	0.0000	3.552E-06	0.0000	0.000E+00	0.0000	8.489E-04	0.0006	4.132E-06	0.0000	5.421E-06	0.0000	4.530E-05	0.0000
Ra-226	1.240E+00	0.9372	1.037E-04	0.0001	0.000E+00	0.0000	8.046E-02	0.0608	1.431E-04	0.0001	2.794E-04	0.0002	1.135E-03	0.0009
Total	1.240E+00	0.9373	1.072E-04	0.0001	0.000E+00	0.0000	8.131E-02	0.0614	1.472E-04	0.0001	2.848E-04	0.0002	1.181E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.409E-04	0.0007
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.322E+00	0.9993
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.323E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.659E-08	0.0000	7.048E-09	0.0000	0.000E+00	0.0000	1.684E-06	0.0000	8.199E-09	0.0000	1.076E-08	0.0000	8.989E-08	0.0000
Ra-226	1.137E+00	0.9373	9.833E-05	0.0001	0.000E+00	0.0000	7.454E-02	0.0614	1.350E-04	0.0001	2.612E-04	0.0002	1.083E-03	0.0009
Total	1.137E+00	0.9373	9.833E-05	0.0001	0.000E+00	0.0000	7.455E-02	0.0614	1.350E-04	0.0001	2.612E-04	0.0002	1.083E-03	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.867E-06	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.213E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.213E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.317E-17	0.0000	2.452E-18	0.0000	0.000E+00	0.0000	5.861E-16	0.0000	2.853E-18	0.0000	3.742E-18	0.0000	3.128E-17	0.0000
Ra-226	8.385E-01	0.9373	7.252E-05	0.0001	0.000E+00	0.0000	5.498E-02	0.0614	9.958E-05	0.0001	1.926E-04	0.0002	7.986E-04	0.0009
Total	8.385E-01	0.9373	7.252E-05	0.0001	0.000E+00	0.0000	5.498E-02	0.0614	9.958E-05	0.0001	1.926E-04	0.0002	7.986E-04	0.0009

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.496E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.947E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.947E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	2.112E-02	2.048E-02	1.924E-02	1.547E-02	8.306E-03	9.409E-04	1.867E-06	6.496E-16
Ra-226+D	Ra-226+D	1.000E+00	1.360E+00	1.360E+00	1.358E+00	1.354E+00	1.343E+00	1.302E+00	1.194E+00	8.804E-01
Ra-226+D	Pb-210+D	1.000E+00	6.469E-04	1.322E-03	2.554E-03	6.302E-03	1.338E-02	2.018E-02	1.937E-02	1.429E-02
Ra-226+D	ΣDSR(j)		1.361E+00	1.361E+00	1.361E+00	1.361E+00	1.356E+00	1.322E+00	1.213E+00	8.947E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.184E+03	1.221E+03	1.299E+03	1.616E+03	3.010E+03	2.657E+04	1.339E+07	*7.634E+13	
Ra-226	1.837E+01	1.837E+01	1.837E+01	1.837E+01	1.844E+01	1.890E+01	2.061E+01	2.794E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	2.112E-02	1.184E+03	2.112E-02	1.184E+03
Ra-226	1.000E+00	3.339 ± 0.007	1.361E+00	1.837E+01	1.361E+00	1.837E+01

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	2.112E-02	2.048E-02	1.924E-02	1.547E-02	8.306E-03	9.409E-04	1.867E-06	6.496E-16
Pb-210	Ra-226	1.000E+00	6.469E-04	1.322E-03	2.554E-03	6.302E-03	1.338E-02	2.018E-02	1.937E-02	1.429E-02
Pb-210	ΣDOSE(j)		2.177E-02	2.180E-02	2.179E-02	2.178E-02	2.168E-02	2.112E-02	1.938E-02	1.429E-02
Ra-226	Ra-226	1.000E+00	1.360E+00	1.360E+00	1.358E+00	1.354E+00	1.343E+00	1.302E+00	1.194E+00	8.804E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.46 seconds

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Summary : Hematite - Uniform Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 3.088E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.237E-03	0.0004	1.030E-04	0.0000	0.000E+00	0.0000	1.906E-01	0.0617	9.276E-04	0.0003	1.217E-03	0.0004	1.017E-02	0.0033
Ra-226	2.223E+00	0.7200	4.035E-05	0.0000	0.000E+00	0.0000	6.560E-01	0.2125	5.978E-04	0.0002	1.742E-03	0.0006	2.034E-03	0.0007
Total	2.224E+00	0.7204	1.433E-04	0.0000	0.000E+00	0.0000	8.466E-01	0.2742	1.525E-03	0.0005	2.959E-03	0.0010	1.220E-02	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.042E-01	0.0661
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.883E+00	0.9339
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.088E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.199E-03	0.0004	9.983E-05	0.0000	0.000E+00	0.0000	1.847E-01	0.0598	8.992E-04	0.0003	1.180E-03	0.0004	9.859E-03	0.0032
Ra-226	2.222E+00	0.7199	4.349E-05	0.0000	0.000E+00	0.0000	6.618E-01	0.2144	6.267E-04	0.0002	1.779E-03	0.0006	2.344E-03	0.0008
Total	2.223E+00	0.7203	1.433E-04	0.0000	0.000E+00	0.0000	8.466E-01	0.2743	1.526E-03	0.0005	2.959E-03	0.0010	1.220E-02	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.980E-01	0.0641
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.889E+00	0.9359
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.087E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.126E-03	0.0004	9.381E-05	0.0000	0.000E+00	0.0000	1.736E-01	0.0563	8.450E-04	0.0003	1.108E-03	0.0004	9.264E-03	0.0030
Ra-226	2.220E+00	0.7199	4.946E-05	0.0000	0.000E+00	0.0000	6.724E-01	0.2180	6.804E-04	0.0002	1.849E-03	0.0006	2.936E-03	0.0010
Total	2.221E+00	0.7202	1.433E-04	0.0000	0.000E+00	0.0000	8.460E-01	0.2743	1.525E-03	0.0005	2.957E-03	0.0010	1.220E-02	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.860E-01	0.0603
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.898E+00	0.9397
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.084E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.059E-04	0.0003	7.545E-05	0.0000	0.000E+00	0.0000	1.396E-01	0.0454	6.796E-04	0.0002	8.915E-04	0.0003	7.451E-03	0.0024
Ra-226	2.214E+00	0.7198	6.763E-05	0.0000	0.000E+00	0.0000	7.042E-01	0.2290	8.432E-04	0.0003	2.060E-03	0.0007	4.735E-03	0.0015
Total	2.215E+00	0.7201	1.431E-04	0.0000	0.000E+00	0.0000	8.439E-01	0.2744	1.523E-03	0.0005	2.951E-03	0.0010	1.219E-02	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.496E-01	0.0487
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.926E+00	0.9513
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.075E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.862E-04	0.0002	4.050E-05	0.0000	0.000E+00	0.0000	7.494E-02	0.0246	3.648E-04	0.0001	4.785E-04	0.0002	3.999E-03	0.0013
Ra-226	2.195E+00	0.7198	1.018E-04	0.0000	0.000E+00	0.0000	7.624E-01	0.2500	1.149E-03	0.0004	2.452E-03	0.0008	8.126E-03	0.0027
Total	2.195E+00	0.7199	1.423E-04	0.0000	0.000E+00	0.0000	8.374E-01	0.2746	1.514E-03	0.0005	2.931E-03	0.0010	1.213E-02	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.031E-02	0.0263
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.969E+00	0.9737
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.050E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.508E-05	0.0000	4.587E-06	0.0000	0.000E+00	0.0000	8.489E-03	0.0029	4.132E-05	0.0000	5.421E-05	0.0000	4.530E-04	0.0002
Ra-226	2.130E+00	0.7197	1.339E-04	0.0000	0.000E+00	0.0000	8.046E-01	0.2719	1.431E-03	0.0005	2.794E-03	0.0009	1.135E-02	0.0038
Total	2.130E+00	0.7197	1.385E-04	0.0000	0.000E+00	0.0000	8.131E-01	0.2748	1.472E-03	0.0005	2.848E-03	0.0010	1.181E-02	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.097E-03	0.0031
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.950E+00	0.9969
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.959E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.093E-07	0.0000	9.102E-09	0.0000	0.000E+00	0.0000	1.684E-05	0.0000	8.199E-08	0.0000	1.076E-07	0.0000	8.989E-07	0.0000
Ra-226	1.952E+00	0.7197	1.270E-04	0.0000	0.000E+00	0.0000	7.454E-01	0.2748	1.350E-03	0.0005	2.612E-03	0.0010	1.083E-02	0.0040
Total	1.952E+00	0.7197	1.270E-04	0.0000	0.000E+00	0.0000	7.455E-01	0.2748	1.350E-03	0.0005	2.612E-03	0.0010	1.083E-02	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.805E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.712E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.712E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.803E-17	0.0000	3.167E-18	0.0000	0.000E+00	0.0000	5.861E-15	0.0000	2.853E-17	0.0000	3.742E-17	0.0000	3.128E-16	0.0000
Ra-226	1.440E+00	0.7197	9.366E-05	0.0000	0.000E+00	0.0000	5.498E-01	0.2748	9.958E-04	0.0005	1.926E-03	0.0010	7.986E-03	0.0040
Total	1.440E+00	0.7197	9.366E-05	0.0000	0.000E+00	0.0000	5.498E-01	0.2748	9.958E-04	0.0005	1.926E-03	0.0010	7.986E-03	0.0040

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.281E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.000E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.000E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	2.042E-01	1.980E-01	1.860E-01	1.496E-01	8.031E-02	9.097E-03	1.805E-05	6.281E-15
Ra-226+D	Ra-226+D	1.000E+00	2.877E+00	2.876E+00	2.873E+00	2.865E+00	2.840E+00	2.755E+00	2.525E+00	1.862E+00
Ra-226+D	Pb-210+D	1.000E+00	6.360E-03	1.289E-02	2.481E-02	6.105E-02	1.294E-01	1.953E-01	1.874E-01	1.382E-01
Ra-226+D	ΣDSR(j)		2.883E+00	2.889E+00	2.898E+00	2.926E+00	2.969E+00	2.950E+00	2.712E+00	2.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.224E+02	1.263E+02	1.344E+02	1.671E+02	3.113E+02	2.748E+03	1.385E+06	*7.634E+13	
Ra-226	8.670E+00	8.654E+00	8.626E+00	8.545E+00	8.420E+00	8.475E+00	9.217E+00	1.250E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	2.042E-01	1.224E+02	2.042E-01	1.224E+02
Ra-226	1.000E+00	51.0 ± 0.1	2.980E+00	8.388E+00	2.883E+00	8.670E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	2.042E-01	1.980E-01	1.860E-01	1.496E-01	8.031E-02	9.097E-03	1.805E-05	6.281E-15
Pb-210	Ra-226	1.000E+00	6.360E-03	1.289E-02	2.481E-02	6.105E-02	1.294E-01	1.953E-01	1.874E-01	1.382E-01
Pb-210	ΣDOSE(j)		2.106E-01	2.109E-01	2.108E-01	2.107E-01	2.097E-01	2.044E-01	1.874E-01	1.382E-01
Ra-226	Ra-226	1.000E+00	2.877E+00	2.876E+00	2.873E+00	2.865E+00	2.840E+00	2.755E+00	2.525E+00	1.862E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.28 seconds

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Summary : Hematite - Uniform Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 1.116E+01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.380E-03	0.0001	1.325E-04	0.0000	0.000E+00	0.0000	1.906E+00	0.1708	9.277E-03	0.0008	1.217E-02	0.0011	1.017E-01	0.0091
Ra-226	2.526E+00	0.2263	5.192E-05	0.0000	0.000E+00	0.0000	6.560E+00	0.5878	5.978E-03	0.0005	1.742E-02	0.0016	2.034E-02	0.0018
Total	2.527E+00	0.2265	1.844E-04	0.0000	0.000E+00	0.0000	8.466E+00	0.7586	1.525E-02	0.0014	2.959E-02	0.0027	1.220E-01	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.030E+00	0.1819
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.130E+00	0.8181
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.116E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.338E-03	0.0001	1.285E-04	0.0000	0.000E+00	0.0000	1.847E+00	0.1655	8.992E-03	0.0008	1.180E-02	0.0011	9.859E-02	0.0088
Ra-226	2.525E+00	0.2263	5.596E-05	0.0000	0.000E+00	0.0000	6.618E+00	0.5931	6.267E-03	0.0006	1.779E-02	0.0016	2.344E-02	0.0021
Total	2.526E+00	0.2264	1.844E-04	0.0000	0.000E+00	0.0000	8.466E+00	0.7586	1.526E-02	0.0014	2.959E-02	0.0027	1.220E-01	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.968E+00	0.1764
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.191E+00	0.8236
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.116E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.257E-03	0.0001	1.207E-04	0.0000	0.000E+00	0.0000	1.736E+00	0.1557	8.450E-03	0.0008	1.108E-02	0.0010	9.264E-02	0.0083
Ra-226	2.523E+00	0.2262	6.365E-05	0.0000	0.000E+00	0.0000	6.724E+00	0.6030	6.804E-03	0.0006	1.849E-02	0.0017	2.936E-02	0.0026
Total	2.524E+00	0.2263	1.843E-04	0.0000	0.000E+00	0.0000	8.460E+00	0.7587	1.525E-02	0.0014	2.957E-02	0.0027	1.220E-01	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.849E+00	0.1659
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.301E+00	0.8341
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.115E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.011E-03	0.0001	9.708E-05	0.0000	0.000E+00	0.0000	1.396E+00	0.1255	6.796E-03	0.0006	8.915E-03	0.0008	7.451E-02	0.0067
Ra-226	2.515E+00	0.2262	8.701E-05	0.0000	0.000E+00	0.0000	7.042E+00	0.6332	8.432E-03	0.0008	2.060E-02	0.0019	4.735E-02	0.0043
Total	2.516E+00	0.2263	1.841E-04	0.0000	0.000E+00	0.0000	8.439E+00	0.7588	1.523E-02	0.0014	2.951E-02	0.0027	1.219E-01	0.0110

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.488E+00	0.1337
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.634E+00	0.8663
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.427E-04	0.0000	5.211E-05	0.0000	0.000E+00	0.0000	7.494E-01	0.0679	3.648E-03	0.0003	4.785E-03	0.0004	3.999E-02	0.0036
Ra-226	2.494E+00	0.2260	1.310E-04	0.0000	0.000E+00	0.0000	7.624E+00	0.6910	1.149E-02	0.0010	2.452E-02	0.0022	8.126E-02	0.0074
Total	2.495E+00	0.2261	1.831E-04	0.0000	0.000E+00	0.0000	8.374E+00	0.7589	1.514E-02	0.0014	2.931E-02	0.0027	1.213E-01	0.0110

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.984E-01	0.0724
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.024E+01	0.9276
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.103E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.148E-05	0.0000	5.903E-06	0.0000	0.000E+00	0.0000	8.489E-02	0.0079	4.132E-04	0.0000	5.421E-04	0.0001	4.530E-03	0.0004
Ra-226	2.420E+00	0.2259	1.723E-04	0.0000	0.000E+00	0.0000	8.046E+00	0.7511	1.431E-02	0.0013	2.794E-02	0.0026	1.135E-01	0.0106
Total	2.420E+00	0.2259	1.782E-04	0.0000	0.000E+00	0.0000	8.131E+00	0.7590	1.472E-02	0.0014	2.848E-02	0.0027	1.181E-01	0.0110

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.044E-02	0.0084
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.062E+01	0.9916
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.071E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.220E-07	0.0000	1.171E-08	0.0000	0.000E+00	0.0000	1.684E-04	0.0000	8.199E-07	0.0000	1.076E-06	0.0000	8.989E-06	0.0000
Ra-226	2.218E+00	0.2259	1.634E-04	0.0000	0.000E+00	0.0000	7.454E+00	0.7591	1.350E-02	0.0014	2.612E-02	0.0027	1.083E-01	0.0110
Total	2.218E+00	0.2259	1.634E-04	0.0000	0.000E+00	0.0000	7.455E+00	0.7591	1.350E-02	0.0014	2.612E-02	0.0027	1.083E-01	0.0110

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.795E-04	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.821E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.821E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.244E-17	0.0000	4.075E-18	0.0000	0.000E+00	0.0000	5.861E-14	0.0000	2.853E-16	0.0000	3.742E-16	0.0000	3.128E-15	0.0000
Ra-226	1.636E+00	0.2259	1.205E-04	0.0000	0.000E+00	0.0000	5.498E+00	0.7591	9.958E-03	0.0014	1.926E-02	0.0027	7.986E-02	0.0110
Total	1.636E+00	0.2259	1.205E-04	0.0000	0.000E+00	0.0000	5.498E+00	0.7591	9.958E-03	0.0014	1.926E-02	0.0027	7.986E-02	0.0110

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.244E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.243E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.243E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	2.030E+00	1.968E+00	1.849E+00	1.488E+00	7.984E-01	9.044E-02	1.795E-04	6.244E-14
Ra-226+D	Ra-226+D	1.000E+00	9.066E+00	9.062E+00	9.055E+00	9.027E+00	8.949E+00	8.680E+00	7.957E+00	5.868E+00
Ra-226+D	Pb-210+D	1.000E+00	6.341E-02	1.284E-01	2.469E-01	6.071E-01	1.287E+00	1.941E+00	1.864E+00	1.374E+00
Ra-226+D	ΣDSR(j)		9.130E+00	9.191E+00	9.301E+00	9.634E+00	1.024E+01	1.062E+01	9.821E+00	7.243E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.231E+01	1.270E+01	1.352E+01	1.681E+01	3.131E+01	2.764E+02	1.393E+05	*7.634E+13	
Ra-226	2.738E+00	2.720E+00	2.688E+00	2.595E+00	2.442E+00	2.354E+00	2.546E+00	3.452E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	2.030E+00	1.231E+01	2.030E+00	1.231E+01
Ra-226	1.000E+00	83.9 ± 0.2	1.064E+01	2.350E+00	9.130E+00	2.738E+00

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	2.030E+00	1.968E+00	1.849E+00	1.488E+00	7.984E-01	9.044E-02	1.795E-04	6.244E-14
Pb-210	Ra-226	1.000E+00	6.341E-02	1.284E-01	2.469E-01	6.071E-01	1.287E+00	1.941E+00	1.864E+00	1.374E+00
Pb-210	ΣDOSE(j)		2.094E+00	2.097E+00	2.096E+00	2.095E+00	2.085E+00	2.032E+00	1.864E+00	1.374E+00
Ra-226	Ra-226	1.000E+00	9.066E+00	9.062E+00	9.055E+00	9.027E+00	8.949E+00	8.680E+00	7.957E+00	5.868E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.37 seconds

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Time = 1.000E+01	12
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Time = 1.000E+02	14
Time = 3.000E+02	15
Time = 1.000E+03	16
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Initial Soil Concentrations, pCi/g

Pb-210	1.000E+00

Ra-226	1.000E+00

Cover Depth: 0.00 meters

Total Mixture Sum $M(t)$ = Fraction of Basic Dose Limit Received at Time (t)

M(t): 4.675E-01 4.675E-01 4.672E-01 4.659E-01 4.623E-01 4.488E-01 4.115E-01 3.035E-01

Maximum TDOSE(t): 1.169E+01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.454E-03	0.0001	1.697E-04	0.0000	0.000E+00	0.0000	1.906E+00	0.1630	9.277E-02	0.0079	1.217E-01	0.0104	1.017E-01	0.0087
Ra-226	2.651E+00	0.2268	6.650E-05	0.0000	0.000E+00	0.0000	6.560E+00	0.5612	5.978E-02	0.0051	1.742E-01	0.0149	2.034E-02	0.0017
Total	2.652E+00	0.2269	2.362E-04	0.0000	0.000E+00	0.0000	8.466E+00	0.7243	1.525E-01	0.0131	2.959E-01	0.0253	1.220E-01	0.0104

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.224E+00	0.1902
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.465E+00	0.8098
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.169E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.409E-03	0.0001	1.645E-04	0.0000	0.000E+00	0.0000	1.847E+00	0.1581	8.992E-02	0.0077	1.180E-01	0.0101	9.859E-02	0.0084
Ra-226	2.650E+00	0.2267	7.166E-05	0.0000	0.000E+00	0.0000	6.618E+00	0.5663	6.267E-02	0.0054	1.779E-01	0.0152	2.344E-02	0.0020
Total	2.651E+00	0.2268	2.362E-04	0.0000	0.000E+00	0.0000	8.466E+00	0.7243	1.526E-01	0.0131	2.959E-01	0.0253	1.220E-01	0.0104

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.155E+00	0.1844
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.532E+00	0.8156
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.169E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.324E-03	0.0001	1.546E-04	0.0000	0.000E+00	0.0000	1.736E+00	0.1486	8.450E-02	0.0072	1.108E-01	0.0095	9.264E-02	0.0079
Ra-226	2.647E+00	0.2267	8.151E-05	0.0000	0.000E+00	0.0000	6.724E+00	0.5757	6.804E-02	0.0058	1.849E-01	0.0158	2.936E-02	0.0025
Total	2.649E+00	0.2268	2.361E-04	0.0000	0.000E+00	0.0000	8.460E+00	0.7244	1.525E-01	0.0131	2.957E-01	0.0253	1.220E-01	0.0104

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.025E+00	0.1734
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.654E+00	0.8266
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.168E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.065E-03	0.0001	1.243E-04	0.0000	0.000E+00	0.0000	1.396E+00	0.1199	6.796E-02	0.0058	8.915E-02	0.0077	7.451E-02	0.0064
Ra-226	2.640E+00	0.2266	1.114E-04	0.0000	0.000E+00	0.0000	7.042E+00	0.6046	8.432E-02	0.0072	2.060E-01	0.0177	4.735E-02	0.0041
Total	2.641E+00	0.2267	2.358E-04	0.0000	0.000E+00	0.0000	8.439E+00	0.7244	1.523E-01	0.0131	2.951E-01	0.0253	1.219E-01	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.629E+00	0.1398
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.002E+01	0.8602
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.165E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.716E-04	0.0000	6.673E-05	0.0000	0.000E+00	0.0000	7.494E-01	0.0648	3.648E-02	0.0032	4.785E-02	0.0041	3.999E-02	0.0035
Ra-226	2.617E+00	0.2264	1.677E-04	0.0000	0.000E+00	0.0000	7.624E+00	0.6597	1.149E-01	0.0099	2.452E-01	0.0212	8.126E-02	0.0070
Total	2.618E+00	0.2265	2.345E-04	0.0000	0.000E+00	0.0000	8.374E+00	0.7245	1.514E-01	0.0131	2.931E-01	0.0254	1.213E-01	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.743E-01	0.0757
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.068E+01	0.9243
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.156E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.475E-05	0.0000	7.560E-06	0.0000	0.000E+00	0.0000	8.489E-02	0.0076	4.132E-03	0.0004	5.421E-03	0.0005	4.530E-03	0.0004
Ra-226	2.539E+00	0.2263	2.206E-04	0.0000	0.000E+00	0.0000	8.046E+00	0.7171	1.431E-01	0.0128	2.794E-01	0.0249	1.135E-01	0.0101
Total	2.539E+00	0.2263	2.282E-04	0.0000	0.000E+00	0.0000	8.131E+00	0.7246	1.472E-01	0.0131	2.848E-01	0.0254	1.181E-01	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.905E-02	0.0088
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	0.9912
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.122E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.285E-07	0.0000	1.500E-08	0.0000	0.000E+00	0.0000	1.684E-04	0.0000	8.199E-06	0.0000	1.076E-05	0.0000	8.989E-06	0.0000
Ra-226	2.328E+00	0.2263	2.093E-04	0.0000	0.000E+00	0.0000	7.454E+00	0.7246	1.350E-01	0.0131	2.612E-01	0.0254	1.083E-01	0.0105
Total	2.328E+00	0.2263	2.093E-04	0.0000	0.000E+00	0.0000	7.455E+00	0.7247	1.350E-01	0.0131	2.612E-01	0.0254	1.083E-01	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.965E-04	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.029E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.029E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.470E-17	0.0000	5.219E-18	0.0000	0.000E+00	0.0000	5.861E-14	0.0000	2.853E-15	0.0000	3.742E-15	0.0000	3.128E-15	0.0000
Ra-226	1.717E+00	0.2263	1.543E-04	0.0000	0.000E+00	0.0000	5.498E+00	0.7247	9.958E-02	0.0131	1.926E-01	0.0254	7.986E-02	0.0105
Total	1.717E+00	0.2263	1.543E-04	0.0000	0.000E+00	0.0000	5.498E+00	0.7247	9.958E-02	0.0131	1.926E-01	0.0254	7.986E-02	0.0105

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.838E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.586E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.586E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	2.224E+00	2.155E+00	2.025E+00	1.629E+00	8.743E-01	9.905E-02	1.965E-04	6.838E-14
Ra-226+D	Ra-226+D	1.000E+00	9.397E+00	9.393E+00	9.385E+00	9.357E+00	9.276E+00	8.997E+00	8.248E+00	6.082E+00
Ra-226+D	Pb-210+D	1.000E+00	6.780E-02	1.388E-01	2.685E-01	6.631E-01	1.408E+00	2.124E+00	2.039E+00	1.504E+00
Ra-226+D	ΣDSR(j)		9.465E+00	9.532E+00	9.654E+00	1.002E+01	1.068E+01	1.112E+01	1.029E+01	7.586E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.124E+01	1.160E+01	1.234E+01	1.535E+01	2.859E+01	2.524E+02	1.272E+05	*7.634E+13	
Ra-226	2.641E+00	2.623E+00	2.590E+00	2.495E+00	2.340E+00	2.248E+00	2.430E+00	3.295E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	2.224E+00	1.124E+01	2.224E+00	1.124E+01
Ra-226	1.000E+00	85.3 ± 0.2	1.114E+01	2.245E+00	9.465E+00	2.641E+00

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	2.224E+00	2.155E+00	2.025E+00	1.629E+00	8.743E-01	9.905E-02	1.965E-04	6.838E-14
Pb-210	Ra-226	1.000E+00	6.780E-02	1.388E-01	2.685E-01	6.631E-01	1.408E+00	2.124E+00	2.039E+00	1.504E+00
Pb-210	ΣDOSE(j)		2.291E+00	2.294E+00	2.294E+00	2.292E+00	2.282E+00	2.223E+00	2.039E+00	1.504E+00
Ra-226	Ra-226	1.000E+00	9.397E+00	9.393E+00	9.385E+00	9.357E+00	9.276E+00	8.997E+00	8.248E+00	6.082E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.42 seconds

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Time = 1.000E+00	10
Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
Time = 1.000E+02	14
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Summary : Hematite - Uniform Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 6.495E-01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.717E-04	0.0006	6.968E-05	0.0001	0.000E+00	0.0000	5.717E-03	0.0088	2.783E-05	0.0000	3.651E-05	0.0001	3.051E-04	0.0005
Ra-226	6.232E-01	0.9594	2.730E-05	0.0000	0.000E+00	0.0000	1.968E-02	0.0303	1.793E-05	0.0000	5.227E-05	0.0001	6.101E-05	0.0001
Total	6.235E-01	0.9600	9.698E-05	0.0001	0.000E+00	0.0000	2.540E-02	0.0391	4.576E-05	0.0001	8.878E-05	0.0001	3.661E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.528E-03	0.0101
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.430E-01	0.9899
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.495E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.603E-04	0.0006	6.754E-05	0.0001	0.000E+00	0.0000	5.542E-03	0.0085	2.698E-05	0.0000	3.539E-05	0.0001	2.958E-04	0.0005
Ra-226	6.229E-01	0.9594	2.942E-05	0.0000	0.000E+00	0.0000	1.986E-02	0.0306	1.880E-05	0.0000	5.338E-05	0.0001	7.032E-05	0.0001
Total	6.233E-01	0.9600	9.696E-05	0.0001	0.000E+00	0.0000	2.540E-02	0.0391	4.578E-05	0.0001	8.877E-05	0.0001	3.661E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.328E-03	0.0097
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.429E-01	0.9903
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.492E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.386E-04	0.0005	6.347E-05	0.0001	0.000E+00	0.0000	5.208E-03	0.0080	2.535E-05	0.0000	3.325E-05	0.0001	2.779E-04	0.0004
Ra-226	6.224E-01	0.9594	3.347E-05	0.0001	0.000E+00	0.0000	2.017E-02	0.0311	2.041E-05	0.0000	5.546E-05	0.0001	8.808E-05	0.0001
Total	6.227E-01	0.9600	9.693E-05	0.0001	0.000E+00	0.0000	2.538E-02	0.0391	4.576E-05	0.0001	8.872E-05	0.0001	3.660E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.946E-03	0.0092
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.427E-01	0.9908
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.487E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	2.723E-04	0.0004	5.105E-05	0.0001	0.000E+00	0.0000	4.189E-03	0.0065	2.039E-05	0.0000	2.675E-05	0.0000	2.235E-04	0.0003
Ra-226	6.205E-01	0.9595	4.575E-05	0.0001	0.000E+00	0.0000	2.113E-02	0.0327	2.530E-05	0.0000	6.179E-05	0.0001	1.421E-04	0.0002
Total	6.208E-01	0.9599	9.680E-05	0.0001	0.000E+00	0.0000	2.532E-02	0.0391	4.569E-05	0.0001	8.853E-05	0.0001	3.656E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.783E-03	0.0074
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.420E-01	0.9926
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.467E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.462E-04	0.0002	2.740E-05	0.0000	0.000E+00	0.0000	2.248E-03	0.0035	1.094E-05	0.0000	1.436E-05	0.0000	1.200E-04	0.0002
Ra-226	6.153E-01	0.9597	6.887E-05	0.0001	0.000E+00	0.0000	2.287E-02	0.0357	3.447E-05	0.0001	7.357E-05	0.0001	2.438E-04	0.0004
Total	6.154E-01	0.9599	9.627E-05	0.0002	0.000E+00	0.0000	2.512E-02	0.0392	4.541E-05	0.0001	8.793E-05	0.0001	3.638E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-03	0.0040
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.386E-01	0.9960
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.412E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.656E-05	0.0000	3.104E-06	0.0000	0.000E+00	0.0000	2.547E-04	0.0004	1.240E-06	0.0000	1.626E-06	0.0000	1.359E-05	0.0000
Ra-226	5.970E-01	0.9598	9.059E-05	0.0001	0.000E+00	0.0000	2.414E-02	0.0388	4.293E-05	0.0001	8.383E-05	0.0001	3.406E-04	0.0005
Total	5.970E-01	0.9599	9.369E-05	0.0002	0.000E+00	0.0000	2.439E-02	0.0392	4.417E-05	0.0001	8.545E-05	0.0001	3.542E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.908E-04	0.0005
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.217E-01	0.9995
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.220E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.285E-08	0.0000	6.158E-09	0.0000	0.000E+00	0.0000	5.053E-07	0.0000	2.460E-09	0.0000	3.227E-09	0.0000	2.697E-08	0.0000
Ra-226	5.472E-01	0.9598	8.591E-05	0.0002	0.000E+00	0.0000	2.236E-02	0.0392	4.051E-05	0.0001	7.835E-05	0.0001	3.248E-04	0.0006
Total	5.472E-01	0.9598	8.592E-05	0.0002	0.000E+00	0.0000	2.236E-02	0.0392	4.051E-05	0.0001	7.835E-05	0.0001	3.249E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.770E-07	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.701E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.701E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.143E-17	0.0000	2.143E-18	0.0000	0.000E+00	0.0000	1.758E-16	0.0000	8.559E-19	0.0000	1.123E-18	0.0000	9.383E-18	0.0000
Ra-226	4.036E-01	0.9598	6.336E-05	0.0002	0.000E+00	0.0000	1.649E-02	0.0392	2.987E-05	0.0001	5.778E-05	0.0001	2.396E-04	0.0006
Total	4.036E-01	0.9598	6.336E-05	0.0002	0.000E+00	0.0000	1.649E-02	0.0392	2.987E-05	0.0001	5.778E-05	0.0001	2.396E-04	0.0006

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.008E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.205E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.205E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	6.528E-03	6.328E-03	5.946E-03	4.783E-03	2.567E-03	2.908E-04	5.770E-07	2.008E-16
Ra-226+D	Ra-226+D	1.000E+00	6.428E-01	6.425E-01	6.420E-01	6.400E-01	6.345E-01	6.154E-01	5.641E-01	4.160E-01
Ra-226+D	Pb-210+D	1.000E+00	1.971E-04	4.053E-04	7.862E-04	1.945E-03	4.131E-03	6.235E-03	5.985E-03	4.414E-03
Ra-226+D	ΣDSR(j)		6.430E-01	6.429E-01	6.427E-01	6.420E-01	6.386E-01	6.217E-01	5.701E-01	4.205E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	3.830E+03	3.951E+03	4.204E+03	5.227E+03	9.739E+03	8.597E+04	4.333E+07	*7.634E+13	
Ra-226	3.888E+01	3.888E+01	3.890E+01	3.894E+01	3.915E+01	4.021E+01	4.385E+01	5.946E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	6.528E-03	3.830E+03	6.528E-03	3.830E+03
Ra-226	1.000E+00	0.000E+00	6.430E-01	3.888E+01	6.430E-01	3.888E+01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr								
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
Pb-210	Pb-210	1.000E+00	6.528E-03	6.328E-03	5.946E-03	4.783E-03	2.567E-03	2.908E-04	5.770E-07	2.008E-16	
Pb-210	Ra-226	1.000E+00	1.971E-04	4.053E-04	7.862E-04	1.945E-03	4.131E-03	6.235E-03	5.985E-03	4.414E-03	
Pb-210	ΣDOSE(j)		6.725E-03	6.733E-03	6.733E-03	6.727E-03	6.698E-03	6.526E-03	5.985E-03	4.414E-03	
Ra-226	Ra-226	1.000E+00	6.428E-01	6.425E-01	6.420E-01	6.400E-01	6.345E-01	6.154E-01	5.641E-01	4.160E-01	

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g								
			t = 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14	
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01	
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01	
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01	

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.28 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
Time = 3.000E+01	13
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Time = 3.000E+02	15
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Summary : Hematite - Uniform Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM RA-226+C CSM.RAD

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Pb-210	1.000E+00
Thickness:	6.70 meters	Ra-226	1.000E+00
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.059E+00	2.058E+00	2.056E+00	2.050E+00	2.033E+00	1.972E+00	1.808E+00	1.333E+00
M(t):	8.235E-02	8.232E-02	8.225E-02	8.201E-02	8.131E-02	7.888E-02	7.231E-02	5.333E-02

Maximum TDOSE(t): 2.059E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.019E-03	0.0005	9.013E-05	0.0000	0.000E+00	0.0000	5.717E-02	0.0278	2.783E-04	0.0001	3.651E-04	0.0002	3.051E-03	0.0015
Ra-226	1.799E+00	0.8737	3.532E-05	0.0000	0.000E+00	0.0000	1.968E-01	0.0956	1.793E-04	0.0001	5.227E-04	0.0003	6.101E-04	0.0003
Total	1.800E+00	0.8741	1.254E-04	0.0001	0.000E+00	0.0000	2.540E-01	0.1234	4.576E-04	0.0002	8.878E-04	0.0004	3.661E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.198E-02	0.0301
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.997E+00	0.9699
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.059E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.874E-04	0.0005	8.737E-05	0.0000	0.000E+00	0.0000	5.542E-02	0.0269	2.698E-04	0.0001	3.539E-04	0.0002	2.958E-03	0.0014
Ra-226	1.798E+00	0.8736	3.806E-05	0.0000	0.000E+00	0.0000	1.986E-01	0.0965	1.880E-04	0.0001	5.338E-04	0.0003	7.032E-04	0.0003
Total	1.799E+00	0.8741	1.254E-04	0.0001	0.000E+00	0.0000	2.540E-01	0.1234	4.578E-04	0.0002	8.877E-04	0.0004	3.661E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.008E-02	0.0292
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.998E+00	0.9708
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.058E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.278E-04	0.0005	8.210E-05	0.0000	0.000E+00	0.0000	5.208E-02	0.0253	2.535E-04	0.0001	3.325E-04	0.0002	2.779E-03	0.0014
Ra-226	1.796E+00	0.8736	4.329E-05	0.0000	0.000E+00	0.0000	2.017E-01	0.0981	2.041E-04	0.0001	5.546E-04	0.0003	8.808E-04	0.0004
Total	1.797E+00	0.8741	1.254E-04	0.0001	0.000E+00	0.0000	2.538E-01	0.1234	4.576E-04	0.0002	8.872E-04	0.0004	3.660E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.645E-02	0.0275
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.000E+00	0.9725
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.056E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	7.462E-04	0.0004	6.603E-05	0.0000	0.000E+00	0.0000	4.189E-02	0.0204	2.039E-04	0.0001	2.675E-04	0.0001	2.235E-03	0.0011
Ra-226	1.791E+00	0.8737	5.918E-05	0.0000	0.000E+00	0.0000	2.113E-01	0.1031	2.530E-04	0.0001	6.179E-04	0.0003	1.421E-03	0.0007
Total	1.792E+00	0.8740	1.252E-04	0.0001	0.000E+00	0.0000	2.532E-01	0.1235	4.569E-04	0.0002	8.853E-04	0.0004	3.656E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.540E-02	0.0221
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.005E+00	0.9779
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.005E-04	0.0002	3.544E-05	0.0000	0.000E+00	0.0000	2.248E-02	0.0111	1.094E-04	0.0001	1.436E-04	0.0001	1.200E-03	0.0006
Ra-226	1.776E+00	0.8737	8.908E-05	0.0000	0.000E+00	0.0000	2.287E-01	0.1125	3.447E-04	0.0002	7.357E-04	0.0004	2.438E-03	0.0012
Total	1.776E+00	0.8739	1.245E-04	0.0001	0.000E+00	0.0000	2.512E-01	0.1236	4.541E-04	0.0002	8.793E-04	0.0004	3.638E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.437E-02	0.0120
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.008E+00	0.9880
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.033E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.537E-05	0.0000	4.015E-06	0.0000	0.000E+00	0.0000	2.547E-03	0.0013	1.240E-05	0.0000	1.626E-05	0.0000	1.359E-04	0.0001
Ra-226	1.723E+00	0.8738	1.172E-04	0.0001	0.000E+00	0.0000	2.414E-01	0.1224	4.293E-04	0.0002	8.383E-04	0.0004	3.406E-03	0.0017
Total	1.723E+00	0.8738	1.212E-04	0.0001	0.000E+00	0.0000	2.439E-01	0.1237	4.417E-04	0.0002	8.545E-04	0.0004	3.542E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.761E-03	0.0014
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.969E+00	0.9986
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.972E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.002E-08	0.0000	7.966E-09	0.0000	0.000E+00	0.0000	5.053E-06	0.0000	2.460E-08	0.0000	3.227E-08	0.0000	2.697E-07	0.0000
Ra-226	1.580E+00	0.8738	1.111E-04	0.0001	0.000E+00	0.0000	2.236E-01	0.1237	4.051E-04	0.0002	7.835E-04	0.0004	3.248E-03	0.0018
Total	1.580E+00	0.8738	1.111E-04	0.0001	0.000E+00	0.0000	2.236E-01	0.1237	4.051E-04	0.0002	7.835E-04	0.0004	3.249E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.478E-06	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.808E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.808E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	3.132E-17	0.0000	2.772E-18	0.0000	0.000E+00	0.0000	1.758E-15	0.0000	8.559E-18	0.0000	1.123E-17	0.0000	9.383E-17	0.0000
Ra-226	1.165E+00	0.8738	8.196E-05	0.0001	0.000E+00	0.0000	1.649E-01	0.1237	2.987E-04	0.0002	5.778E-04	0.0004	2.396E-03	0.0018
Total	1.165E+00	0.8738	8.196E-05	0.0001	0.000E+00	0.0000	1.649E-01	0.1237	2.987E-04	0.0002	5.778E-04	0.0004	2.396E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.906E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.333E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.333E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	6.198E-02	6.008E-02	5.645E-02	4.540E-02	2.437E-02	2.761E-03	5.478E-06	1.906E-15
Ra-226+D	Ra-226+D	1.000E+00	1.995E+00	1.994E+00	1.992E+00	1.986E+00	1.969E+00	1.910E+00	1.751E+00	1.291E+00
Ra-226+D	Pb-210+D	1.000E+00	1.919E-03	3.901E-03	7.517E-03	1.851E-02	3.927E-02	5.924E-02	5.687E-02	4.194E-02
Ra-226+D	ΣDSR(j)		1.997E+00	1.998E+00	2.000E+00	2.005E+00	2.008E+00	1.969E+00	1.808E+00	1.333E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	4.034E+02	4.161E+02	4.428E+02	5.506E+02	1.026E+03	9.056E+03	4.564E+06	*7.634E+13	
Ra-226	1.252E+01	1.251E+01	1.250E+01	1.247E+01	1.245E+01	1.270E+01	1.383E+01	1.875E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	6.198E-02	4.034E+02	6.198E-02	4.034E+02
Ra-226	1.000E+00	25.43 ± 0.05	2.009E+00	1.245E+01	1.997E+00	1.252E+01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	6.198E-02	6.008E-02	5.645E-02	4.540E-02	2.437E-02	2.761E-03	5.478E-06	1.906E-15
Pb-210	Ra-226	1.000E+00	1.919E-03	3.901E-03	7.517E-03	1.851E-02	3.927E-02	5.924E-02	5.687E-02	4.194E-02
Pb-210	ΣDOSE(j)		6.389E-02	6.398E-02	6.397E-02	6.392E-02	6.364E-02	6.200E-02	5.687E-02	4.194E-02
Ra-226	Ra-226	1.000E+00	1.995E+00	1.994E+00	1.992E+00	1.986E+00	1.969E+00	1.910E+00	1.751E+00	1.291E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.38 seconds

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Summary : Hematite - Uniform Ra-226+C CSM

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM RA-226+C CSM.RAD

Attachment 4 to HEM-11-91

June 21, 2011

Appendix N

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Maximum TDOSE(t): 5.000E+00 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.326E-03	0.0003	1.162E-04	0.0000	0.000E+00	0.0000	5.717E-01	0.1143	2.783E-03	0.0006	3.651E-03	0.0007	3.051E-02	0.0061
Ra-226	2.409E+00	0.4818	4.554E-05	0.0000	0.000E+00	0.0000	1.968E+00	0.3936	1.793E-03	0.0004	5.227E-03	0.0010	6.101E-03	0.0012
Total	2.410E+00	0.4820	1.617E-04	0.0000	0.000E+00	0.0000	2.540E+00	0.5079	4.576E-03	0.0009	8.878E-03	0.0018	3.661E-02	0.0073

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.101E-01	0.1220
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.390E+00	0.8780
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.000E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.285E-03	0.0003	1.126E-04	0.0000	0.000E+00	0.0000	5.542E-01	0.1109	2.698E-03	0.0005	3.539E-03	0.0007	2.958E-02	0.0059
Ra-226	2.408E+00	0.4817	4.907E-05	0.0000	0.000E+00	0.0000	1.986E+00	0.3972	1.880E-03	0.0004	5.338E-03	0.0011	7.032E-03	0.0014
Total	2.409E+00	0.4819	1.617E-04	0.0000	0.000E+00	0.0000	2.540E+00	0.5080	4.578E-03	0.0009	8.877E-03	0.0018	3.661E-02	0.0073

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.914E-01	0.1183
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.408E+00	0.8817
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.999E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.208E-03	0.0002	1.059E-04	0.0000	0.000E+00	0.0000	5.208E-01	0.1043	2.535E-03	0.0005	3.325E-03	0.0007	2.779E-02	0.0056
Ra-226	2.406E+00	0.4816	5.581E-05	0.0000	0.000E+00	0.0000	2.017E+00	0.4038	2.041E-03	0.0004	5.546E-03	0.0011	8.808E-03	0.0018
Total	2.407E+00	0.4819	1.617E-04	0.0000	0.000E+00	0.0000	2.538E+00	0.5081	4.576E-03	0.0009	8.872E-03	0.0018	3.660E-02	0.0073

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.557E-01	0.1113
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.439E+00	0.8887
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.995E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	9.713E-04	0.0002	8.514E-05	0.0000	0.000E+00	0.0000	4.189E-01	0.0841	2.039E-03	0.0004	2.675E-03	0.0005	2.235E-02	0.0045
Ra-226	2.399E+00	0.4815	7.631E-05	0.0000	0.000E+00	0.0000	2.113E+00	0.4241	2.530E-03	0.0005	6.179E-03	0.0012	1.421E-02	0.0029
Total	2.400E+00	0.4817	1.614E-04	0.0000	0.000E+00	0.0000	2.532E+00	0.5082	4.569E-03	0.0009	8.853E-03	0.0018	3.656E-02	0.0073

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.470E-01	0.0897
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.534E+00	0.9103
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.981E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.214E-04	0.0001	4.570E-05	0.0000	0.000E+00	0.0000	2.248E-01	0.0455	1.094E-03	0.0002	1.436E-03	0.0003	1.200E-02	0.0024
Ra-226	2.378E+00	0.4814	1.149E-04	0.0000	0.000E+00	0.0000	2.287E+00	0.4629	3.447E-03	0.0007	7.357E-03	0.0015	2.438E-02	0.0049
Total	2.379E+00	0.4815	1.606E-04	0.0000	0.000E+00	0.0000	2.512E+00	0.5084	4.541E-03	0.0009	8.793E-03	0.0018	3.638E-02	0.0074

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.399E-01	0.0486
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.701E+00	0.9514
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.941E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.906E-05	0.0000	5.176E-06	0.0000	0.000E+00	0.0000	2.547E-02	0.0053	1.240E-04	0.0000	1.626E-04	0.0000	1.359E-03	0.0003
Ra-226	2.308E+00	0.4812	1.511E-04	0.0000	0.000E+00	0.0000	2.414E+00	0.5034	4.293E-03	0.0009	8.383E-03	0.0017	3.406E-02	0.0071
Total	2.308E+00	0.4812	1.563E-04	0.0000	0.000E+00	0.0000	2.439E+00	0.5087	4.417E-03	0.0009	8.545E-03	0.0018	3.542E-02	0.0074

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.718E-02	0.0057
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.768E+00	0.9943
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.795E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.172E-07	0.0000	1.027E-08	0.0000	0.000E+00	0.0000	5.053E-05	0.0000	2.460E-07	0.0000	3.227E-07	0.0000	2.697E-06	0.0000
Ra-226	2.115E+00	0.4812	1.433E-04	0.0000	0.000E+00	0.0000	2.236E+00	0.5087	4.051E-03	0.0009	7.835E-03	0.0018	3.248E-02	0.0074
Total	2.115E+00	0.4812	1.433E-04	0.0000	0.000E+00	0.0000	2.236E+00	0.5087	4.051E-03	0.0009	7.835E-03	0.0018	3.249E-02	0.0074

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.392E-05	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.396E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.396E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.077E-17	0.0000	3.574E-18	0.0000	0.000E+00	0.0000	1.758E-14	0.0000	8.559E-17	0.0000	1.123E-16	0.0000	9.383E-16	0.0000
Ra-226	1.560E+00	0.4812	1.057E-04	0.0000	0.000E+00	0.0000	1.649E+00	0.5087	2.987E-03	0.0009	5.778E-03	0.0018	2.396E-02	0.0074
Total	1.560E+00	0.4812	1.057E-04	0.0000	0.000E+00	0.0000	1.649E+00	0.5087	2.987E-03	0.0009	5.778E-03	0.0018	2.396E-02	0.0074

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.876E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.242E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.242E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	6.101E-01	5.914E-01	5.557E-01	4.470E-01	2.399E-01	2.718E-02	5.392E-05	1.876E-14
Ra-226+D	Ra-226+D	1.000E+00	4.371E+00	4.369E+00	4.365E+00	4.352E+00	4.314E+00	4.185E+00	3.836E+00	2.829E+00
Ra-226+D	Pb-210+D	1.000E+00	1.904E-02	3.856E-02	7.416E-02	1.824E-01	3.867E-01	5.834E-01	5.599E-01	4.130E-01
Ra-226+D	ΣDSR(j)		4.390E+00	4.408E+00	4.439E+00	4.534E+00	4.701E+00	4.768E+00	4.396E+00	3.242E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	4.098E+01	4.227E+01	4.498E+01	5.593E+01	1.042E+02	9.199E+02	4.636E+05	*7.634E+13	
Ra-226	5.695E+00	5.672E+00	5.631E+00	5.513E+00	5.318E+00	5.243E+00	5.687E+00	7.711E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	6.101E-01	4.098E+01	6.101E-01	4.098E+01
Ra-226	1.000E+00	70.9 ± 0.1	4.789E+00	5.220E+00	4.390E+00	5.695E+00

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	6.101E-01	5.914E-01	5.557E-01	4.470E-01	2.399E-01	2.718E-02	5.392E-05	1.876E-14
Pb-210	Ra-226	1.000E+00	1.904E-02	3.856E-02	7.416E-02	1.824E-01	3.867E-01	5.834E-01	5.599E-01	4.130E-01
Pb-210	ΣDOSE(j)		6.291E-01	6.300E-01	6.299E-01	6.294E-01	6.266E-01	6.105E-01	5.600E-01	4.130E-01
Ra-226	Ra-226	1.000E+00	4.371E+00	4.369E+00	4.365E+00	4.352E+00	4.314E+00	4.185E+00	3.836E+00	2.829E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.60 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(4)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(5)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(6)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(7)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(8)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(9)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(10)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-34	Food transfer factors:			
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	4.000E-03	1.000E-02	RTF(1,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(1,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(1,3)
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(2,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Pb-210+D , fish	2.930E+02	3.000E+02	BIOFAC(1,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
D-5	Ra-226+D , fish	4.930E+01	5.000E+01	BIOFAC(2,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(2,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Pb-210	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Concentration in groundwater (pCi/L): Pb-210	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Pb-210				
R016	Contaminated zone (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+02	1.000E+02	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.700E+02	1.000E+02	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.994E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE (3)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSNI
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSNI
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	128	---	---	NPTS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3000.00 square meters	Pb-210	1.000E+00
Thickness:	6.70 meters	Ra-226	1.000E+00
Cover Depth:	0.00 meters		

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.130E+01	1.130E+01	1.129E+01	1.126E+01	1.117E+01	1.085E+01	9.946E+00	7.335E+00
M(t):	4.521E-01	4.520E-01	4.517E-01	4.505E-01	4.470E-01	4.340E-01	3.978E-01	2.934E-01

Maximum TDOSE(t): 1.130E+01 mrem/yr at t = 0.000E+00 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.411E-03	0.0001	1.492E-04	0.0000	0.000E+00	0.0000	1.906E+00	0.1686	2.783E-02	0.0025	3.651E-02	0.0032	1.017E-01	0.0090
Ra-226	2.578E+00	0.2281	5.847E-05	0.0000	0.000E+00	0.0000	6.560E+00	0.5804	1.793E-02	0.0016	5.227E-02	0.0046	2.034E-02	0.0018
Total	2.580E+00	0.2282	2.077E-04	0.0000	0.000E+00	0.0000	8.466E+00	0.7490	4.576E-02	0.0040	8.878E-02	0.0079	1.220E-01	0.0108

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.073E+00	0.1834
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.229E+00	0.8166
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.130E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.368E-03	0.0001	1.446E-04	0.0000	0.000E+00	0.0000	1.847E+00	0.1635	2.698E-02	0.0024	3.539E-02	0.0031	9.859E-02	0.0087
Ra-226	2.577E+00	0.2280	6.301E-05	0.0000	0.000E+00	0.0000	6.618E+00	0.5856	1.880E-02	0.0017	5.338E-02	0.0047	2.344E-02	0.0021
Total	2.578E+00	0.2282	2.076E-04	0.0000	0.000E+00	0.0000	8.466E+00	0.7491	4.578E-02	0.0041	8.877E-02	0.0079	1.220E-01	0.0108

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.010E+00	0.1778
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.291E+00	0.8222
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.130E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.286E-03	0.0001	1.359E-04	0.0000	0.000E+00	0.0000	1.736E+00	0.1537	2.535E-02	0.0022	3.325E-02	0.0029	9.264E-02	0.0082
Ra-226	2.575E+00	0.2280	7.167E-05	0.0000	0.000E+00	0.0000	6.724E+00	0.5954	2.041E-02	0.0018	5.546E-02	0.0049	2.936E-02	0.0026
Total	2.576E+00	0.2281	2.076E-04	0.0000	0.000E+00	0.0000	8.460E+00	0.7491	4.576E-02	0.0041	8.872E-02	0.0079	1.220E-01	0.0108

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.889E+00	0.1672
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.404E+00	0.8328
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.129E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.034E-03	0.0001	1.093E-04	0.0000	0.000E+00	0.0000	1.396E+00	0.1240	2.039E-02	0.0018	2.675E-02	0.0024	7.451E-02	0.0066
Ra-226	2.567E+00	0.2279	9.798E-05	0.0000	0.000E+00	0.0000	7.042E+00	0.6253	2.530E-02	0.0022	6.179E-02	0.0055	4.735E-02	0.0042
Total	2.568E+00	0.2280	2.073E-04	0.0000	0.000E+00	0.0000	8.439E+00	0.7492	4.569E-02	0.0041	8.853E-02	0.0079	1.219E-01	0.0108

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.519E+00	0.1349
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.744E+00	0.8651
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.126E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	5.550E-04	0.0000	5.867E-05	0.0000	0.000E+00	0.0000	7.494E-01	0.0671	1.094E-02	0.0010	1.436E-02	0.0013	3.999E-02	0.0036
Ra-226	2.546E+00	0.2278	1.475E-04	0.0000	0.000E+00	0.0000	7.624E+00	0.6823	3.447E-02	0.0031	7.357E-02	0.0066	8.126E-02	0.0073
Total	2.546E+00	0.2278	2.062E-04	0.0000	0.000E+00	0.0000	8.374E+00	0.7494	4.541E-02	0.0041	8.793E-02	0.0079	1.213E-01	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.153E-01	0.0730
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.036E+01	0.9270
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.117E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	6.287E-05	0.0000	6.647E-06	0.0000	0.000E+00	0.0000	8.489E-02	0.0078	1.240E-03	0.0001	1.626E-03	0.0001	4.530E-03	0.0004
Ra-226	2.470E+00	0.2276	1.940E-04	0.0000	0.000E+00	0.0000	8.046E+00	0.7417	4.293E-02	0.0040	8.383E-02	0.0077	1.135E-01	0.0105
Total	2.470E+00	0.2277	2.006E-04	0.0000	0.000E+00	0.0000	8.131E+00	0.7495	4.417E-02	0.0041	8.545E-02	0.0079	1.181E-01	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.236E-02	0.0085
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.076E+01	0.9915
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.085E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	1.247E-07	0.0000	1.319E-08	0.0000	0.000E+00	0.0000	1.684E-04	0.0000	2.460E-06	0.0000	3.227E-06	0.0000	8.989E-06	0.0000
Ra-226	2.264E+00	0.2276	1.840E-04	0.0000	0.000E+00	0.0000	7.454E+00	0.7495	4.051E-02	0.0041	7.835E-02	0.0079	1.083E-01	0.0109
Total	2.264E+00	0.2276	1.840E-04	0.0000	0.000E+00	0.0000	7.455E+00	0.7495	4.051E-02	0.0041	7.835E-02	0.0079	1.083E-01	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.832E-04	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.946E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.946E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	4.340E-17	0.0000	4.589E-18	0.0000	0.000E+00	0.0000	5.861E-14	0.0000	8.559E-16	0.0000	1.123E-15	0.0000	3.128E-15	0.0000
Ra-226	1.670E+00	0.2276	1.357E-04	0.0000	0.000E+00	0.0000	5.498E+00	0.7495	2.987E-02	0.0041	5.778E-02	0.0079	7.986E-02	0.0109
Total	1.670E+00	0.2276	1.357E-04	0.0000	0.000E+00	0.0000	5.498E+00	0.7495	2.987E-02	0.0041	5.778E-02	0.0079	7.986E-02	0.0109

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.376E-14	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.335E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.335E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210+D	Pb-210+D	1.000E+00	2.073E+00	2.010E+00	1.889E+00	1.519E+00	8.153E-01	9.236E-02	1.832E-04	6.376E-14
Ra-226+D	Ra-226+D	1.000E+00	9.164E+00	9.160E+00	9.152E+00	9.125E+00	9.046E+00	8.774E+00	8.043E+00	5.932E+00
Ra-226+D	Pb-210+D	1.000E+00	6.439E-02	1.307E-01	2.517E-01	6.196E-01	1.314E+00	1.982E+00	1.903E+00	1.403E+00
Ra-226+D	ΣDSR(j)		9.229E+00	9.291E+00	9.404E+00	9.744E+00	1.036E+01	1.076E+01	9.946E+00	7.335E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	1.206E+01	1.244E+01	1.324E+01	1.646E+01	3.066E+01	2.707E+02	1.364E+05	*7.634E+13	
Ra-226	2.709E+00	2.691E+00	2.658E+00	2.566E+00	2.413E+00	2.324E+00	2.514E+00	3.408E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Pb-210	1.000E+00	0.000E+00	2.073E+00	1.206E+01	2.073E+00	1.206E+01
Ra-226	1.000E+00	84.2 ± 0.2	1.077E+01	2.321E+00	9.229E+00	2.709E+00

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	2.073E+00	2.010E+00	1.889E+00	1.519E+00	8.153E-01	9.236E-02	1.832E-04	6.376E-14
Pb-210	Ra-226	1.000E+00	6.439E-02	1.307E-01	2.517E-01	6.196E-01	1.314E+00	1.982E+00	1.903E+00	1.403E+00
Pb-210	ΣDOSE(j)		2.138E+00	2.141E+00	2.140E+00	2.139E+00	2.129E+00	2.075E+00	1.903E+00	1.403E+00
Ra-226	Ra-226	1.000E+00	9.164E+00	9.160E+00	9.152E+00	9.125E+00	9.046E+00	8.774E+00	8.043E+00	5.932E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.694E-01	9.109E-01	7.326E-01	3.932E-01	4.454E-02	8.838E-05	3.075E-14
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.017E-01	9.249E-01	8.891E-01	6.558E-01
Pb-210	ΣS(j):		1.000E+00	1.000E+00	9.999E-01	9.991E-01	9.949E-01	9.695E-01	8.892E-01	6.558E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.996E-01	9.987E-01	9.957E-01	9.870E-01	9.574E-01	8.776E-01	6.472E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.67 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-03	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-04	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-04	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.126E-01	4.126E-01	4.126E-01	4.126E-01	4.126E-01	4.126E-01	4.126E-01	4.125E-01
M(t):	1.651E-02	1.651E-02	1.651E-02	1.651E-02	1.650E-02	1.650E-02	1.650E-02	1.650E-02
Maximum TDOSE(t): 4.126E-01 mrem/yr at t = 0.1949 ± 0.0004 years								

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.949E-01 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-														
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Ra-228	1.906E-01	0.4618	2.058E-04	0.0005	0.000E+00	0.0000	6.584E-03	0.0160	5.866E-06	0.0000	1.727E-05	0.0000	2.122E-05	0.0001
Th-228	1.945E-01	0.4714	7.277E-04	0.0018	0.000E+00	0.0000	4.174E-05	0.0001	9.394E-08	0.0000	1.656E-08	0.0000	8.973E-06	0.0000
Th-232	1.473E-02	0.0357	4.432E-03	0.0107	0.000E+00	0.0000	7.231E-04	0.0018	8.123E-07	0.0000	1.400E-06	0.0000	4.051E-05	0.0001
Total	3.998E-01	0.9690	5.366E-03	0.0130	0.000E+00	0.0000	7.349E-03	0.0178	6.773E-06	0.0000	1.869E-05	0.0000	7.071E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.949E-01 years														
Water Dependent Pathways														
Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.974E-01	0.4784
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.953E-01	0.4733
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.993E-02	0.0483
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.807E-01	0.4379	1.569E-04	0.0004	0.000E+00	0.0000	6.734E-03	0.0163	5.993E-06	0.0000	1.768E-05	0.0000	2.106E-05	0.0001
Th-228	2.087E-01	0.5059	7.809E-04	0.0019	0.000E+00	0.0000	4.479E-05	0.0001	1.008E-07	0.0000	1.777E-08	0.0000	9.629E-06	0.0000
Th-232	1.037E-02	0.0251	4.428E-03	0.0107	0.000E+00	0.0000	5.689E-04	0.0014	6.814E-07	0.0000	1.003E-06	0.0000	4.002E-05	0.0001
Total	3.998E-01	0.9690	5.366E-03	0.0130	0.000E+00	0.0000	7.348E-03	0.0178	6.775E-06	0.0000	1.870E-05	0.0000	7.071E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.876E-01	0.4547
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.096E-01	0.5079
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.541E-02	0.0373
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.197E-01	0.5325	3.619E-04	0.0009	0.000E+00	0.0000	5.985E-03	0.0145	5.346E-06	0.0000	1.568E-05	0.0000	2.142E-05	0.0001
Th-228	1.453E-01	0.3521	5.436E-04	0.0013	0.000E+00	0.0000	3.118E-05	0.0001	7.017E-08	0.0000	1.237E-08	0.0000	6.702E-06	0.0000
Th-232	3.478E-02	0.0843	4.460E-03	0.0108	0.000E+00	0.0000	1.333E-03	0.0032	1.356E-06	0.0000	2.997E-06	0.0000	4.259E-05	0.0001
Total	3.998E-01	0.9690	5.366E-03	0.0130	0.000E+00	0.0000	7.349E-03	0.0178	6.773E-06	0.0000	1.869E-05	0.0000	7.071E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.261E-01	0.5480
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.459E-01	0.3535
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.062E-02	0.0984
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.383E-01	0.5774	5.298E-04	0.0013	0.000E+00	0.0000	4.717E-03	0.0114	4.233E-06	0.0000	1.232E-05	0.0000	1.985E-05	0.0000
Th-228	7.040E-02	0.1706	2.634E-04	0.0006	0.000E+00	0.0000	1.511E-05	0.0000	3.400E-08	0.0000	5.993E-09	0.0000	3.247E-06	0.0000
Th-232	9.116E-02	0.2209	4.572E-03	0.0111	0.000E+00	0.0000	2.617E-03	0.0063	2.506E-06	0.0000	6.356E-06	0.0000	4.760E-05	0.0001
Total	3.998E-01	0.9690	5.366E-03	0.0130	0.000E+00	0.0000	7.349E-03	0.0178	6.773E-06	0.0000	1.869E-05	0.0000	7.071E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.435E-01	0.5902
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.068E-02	0.1713
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.841E-02	0.2385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.395E-01	0.3380	3.663E-04	0.0009	0.000E+00	0.0000	2.037E-03	0.0049	1.838E-06	0.0000	5.303E-06	0.0000	1.025E-05	0.0000
Th-228	5.573E-03	0.0135	2.085E-05	0.0001	0.000E+00	0.0000	1.196E-06	0.0000	2.691E-09	0.0000	4.744E-10	0.0000	2.571E-07	0.0000
Th-232	2.548E-01	0.6174	4.978E-03	0.0121	0.000E+00	0.0000	5.311E-03	0.0129	4.932E-06	0.0000	1.338E-05	0.0000	6.020E-05	0.0001
Total	3.998E-01	0.9690	5.366E-03	0.0130	0.000E+00	0.0000	7.349E-03	0.0178	6.773E-06	0.0000	1.869E-05	0.0000	7.071E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.419E-01	0.3439
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.595E-03	0.0136
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.651E-01	0.6425
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.326E-02	0.0321	3.565E-05	0.0001	0.000E+00	0.0000	1.829E-04	0.0004	1.653E-07	0.0000	4.759E-07	0.0000	9.537E-07	0.0000
Th-228	3.972E-06	0.0000	1.486E-08	0.0000	0.000E+00	0.0000	8.524E-10	0.0000	1.918E-12	0.0000	3.382E-13	0.0000	1.832E-10	0.0000
Th-232	3.865E-01	0.9368	5.330E-03	0.0129	0.000E+00	0.0000	7.166E-03	0.0174	6.607E-06	0.0000	1.821E-05	0.0000	6.975E-05	0.0002
Total	3.998E-01	0.9690	5.365E-03	0.0130	0.000E+00	0.0000	7.349E-03	0.0178	6.773E-06	0.0000	1.869E-05	0.0000	7.071E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.348E-02	0.0327
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.988E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.991E-01	0.9673
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.870E-06	0.0000	7.719E-09	0.0000	0.000E+00	0.0000	3.958E-08	0.0000	3.577E-11	0.0000	1.030E-10	0.0000	2.064E-10	0.0000
Th-228	3.841E-17	0.0000	1.437E-19	0.0000	0.000E+00	0.0000	8.241E-21	0.0000	1.855E-23	0.0000	3.270E-24	0.0000	1.772E-21	0.0000
Th-232	3.998E-01	0.9689	5.365E-03	0.0130	0.000E+00	0.0000	7.349E-03	0.0178	6.772E-06	0.0000	1.868E-05	0.0000	7.070E-05	0.0002
Total	3.998E-01	0.9690	5.365E-03	0.0130	0.000E+00	0.0000	7.349E-03	0.0178	6.772E-06	0.0000	1.868E-05	0.0000	7.070E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.918E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.856E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.709E-17	0.0000	2.611E-19	0.0000	0.000E+00	0.0000	1.339E-18	0.0000	1.210E-21	0.0000	3.483E-21	0.0000	6.982E-21	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.998E-01	0.9690	5.365E-03	0.0130	0.000E+00	0.0000	7.348E-03	0.0178	6.772E-06	0.0000	1.868E-05	0.0000	7.070E-05	0.0002
Total	3.998E-01	0.9690	5.365E-03	0.0130	0.000E+00	0.0000	7.348E-03	0.0178	6.772E-06	0.0000	1.868E-05	0.0000	7.070E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.870E-17	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.126E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.997E-01	0.9690	5.364E-03	0.0130	0.000E+00	0.0000	7.347E-03	0.0178	6.771E-06	0.0000	1.868E-05	0.0000	7.069E-05	0.0002
Total	3.997E-01	0.9690	5.364E-03	0.0130	0.000E+00	0.0000	7.347E-03	0.0178	6.771E-06	0.0000	1.868E-05	0.0000	7.069E-05	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.125E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.125E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.490E-01	1.320E-01	1.038E-01	4.462E-02	4.004E-03	8.663E-07	2.930E-17	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.868E-02	9.408E-02	1.398E-01	9.728E-02	9.475E-03	2.052E-06	6.940E-17	0.000E+00
Ra-228+D	ΣDSR(j)		1.876E-01	2.261E-01	2.435E-01	1.419E-01	1.348E-02	2.918E-06	9.870E-17	0.000E+00
Th-228+D	Th-228+D	1.000E+00	2.096E-01	1.459E-01	7.068E-02	5.595E-03	3.988E-06	3.856E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	4.657E-03	4.657E-03	4.657E-03	4.657E-03	4.657E-03	4.656E-03	4.656E-03	4.655E-03
Th-232	Ra-228+D	1.000E+00	9.133E-03	2.605E-02	5.434E-02	1.135E-01	1.541E-01	1.581E-01	1.581E-01	1.581E-01
Th-232	Th-228+D	1.000E+00	1.618E-03	9.918E-03	3.941E-02	1.470E-01	2.404E-01	2.499E-01	2.499E-01	2.498E-01
Th-232	ΣDSR(j)		1.541E-02	4.062E-02	9.841E-02	2.651E-01	3.991E-01	4.126E-01	4.126E-01	4.125E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.332E+02	1.106E+02	1.027E+02	1.762E+02	1.855E+03	8.568E+06	*2.726E+14	*2.726E+14	
Th-228	1.193E+02	1.714E+02	3.537E+02	4.468E+03	6.268E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.623E+03	6.154E+02	2.541E+02	9.429E+01	6.263E+01	6.059E+01	6.059E+01	6.060E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.1949 ± 0.0004 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.615 ± 0.005	2.443E-01	1.023E+02	1.974E-01	1.266E+02
Th-228	1.000E+00	0.000E+00	2.096E-01	1.193E+02	1.953E-01	1.280E+02
Th-232	1.000E+00	110.5 ± 0.2	4.126E-01	6.059E+01	1.993E-02	1.254E+03

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.490E-01	1.320E-01	1.038E-01	4.462E-02	4.004E-03	8.663E-07	2.930E-17 0.000E+00
Ra-228	Th-232	1.000E+00		9.133E-03	2.605E-02	5.434E-02	1.135E-01	1.541E-01	1.581E-01	1.581E-01 1.581E-01
Ra-228	ΣDOSE(j)			1.581E-01	1.581E-01	1.581E-01	1.581E-01	1.581E-01	1.581E-01	1.581E-01 1.581E-01
Th-228	Ra-228	1.000E+00		3.868E-02	9.408E-02	1.398E-01	9.728E-02	9.475E-03	2.052E-06	6.940E-17 0.000E+00
Th-228	Th-228	1.000E+00		2.096E-01	1.459E-01	7.068E-02	5.595E-03	3.988E-06	3.856E-17	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.618E-03	9.918E-03	3.941E-02	1.470E-01	2.404E-01	2.499E-01	2.498E-01 2.498E-01
Th-228	ΣDOSE(j)			2.499E-01	2.499E-01	2.499E-01	2.499E-01	2.499E-01	2.499E-01	2.498E-01 2.498E-01
Th-232	Th-232	1.000E+00		4.657E-03	4.657E-03	4.657E-03	4.657E-03	4.657E-03	4.656E-03	4.656E-03 4.655E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01 9.997E-01
Ra-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01 9.997E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.33 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Summary : Hematite - Uniform Th-232+C CSM - AF 10 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.944E+00	1.944E+00	1.944E+00	1.944E+00	1.944E+00	1.944E+00	1.943E+00	1.943E+00
M(t):	7.774E-02	7.774E-02	7.774E-02	7.774E-02	7.774E-02	7.774E-02	7.774E-02	7.772E-02

Maximum TDOSE(t): 1.944E+00 mrem/yr at t = 0.2132 ± 0.0004 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.132E-01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.867E-01	0.4562	2.723E-04	0.0001	0.000E+00	0.0000	6.570E-02	0.0338	5.854E-05	0.0000	1.723E-04	0.0001	2.123E-04	0.0001
Th-228	9.055E-01	0.4659	9.363E-04	0.0005	0.000E+00	0.0000	4.146E-04	0.0002	9.331E-07	0.0000	1.645E-07	0.0000	8.913E-05	0.0000
Th-232	7.008E-02	0.0361	5.741E-03	0.0030	0.000E+00	0.0000	7.376E-03	0.0038	8.252E-06	0.0000	1.438E-05	0.0000	4.056E-04	0.0002
Total	1.862E+00	0.9581	6.950E-03	0.0036	0.000E+00	0.0000	7.349E-02	0.0378	6.773E-05	0.0000	1.869E-04	0.0001	7.071E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.132E-01 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.531E-01	0.4904
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.069E-01	0.4666
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.363E-02	0.0430
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.361E-01	0.4302	2.032E-04	0.0001	0.000E+00	0.0000	6.734E-02	0.0346	5.993E-05	0.0000	1.768E-04	0.0001	2.106E-04	0.0001
Th-228	9.782E-01	0.5033	1.012E-03	0.0005	0.000E+00	0.0000	4.479E-04	0.0002	1.008E-06	0.0000	1.777E-07	0.0000	9.629E-05	0.0000
Th-232	4.793E-02	0.0247	5.735E-03	0.0030	0.000E+00	0.0000	5.689E-03	0.0029	6.814E-06	0.0000	1.003E-05	0.0000	4.002E-04	0.0002
Total	1.862E+00	0.9581	6.950E-03	0.0036	0.000E+00	0.0000	7.348E-02	0.0378	6.775E-05	0.0000	1.870E-04	0.0001	7.071E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.041E-01	0.4652
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.797E-01	0.5041
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.977E-02	0.0308
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.020E+00	0.5249	4.687E-04	0.0002	0.000E+00	0.0000	5.985E-02	0.0308	5.346E-05	0.0000	1.568E-04	0.0001	2.142E-04	0.0001
Th-228	6.809E-01	0.3503	7.041E-04	0.0004	0.000E+00	0.0000	3.118E-04	0.0002	7.017E-07	0.0000	1.237E-07	0.0000	6.702E-05	0.0000
Th-232	1.611E-01	0.0829	5.777E-03	0.0030	0.000E+00	0.0000	1.333E-02	0.0069	1.356E-05	0.0000	2.997E-05	0.0000	4.259E-04	0.0002
Total	1.862E+00	0.9581	6.950E-03	0.0036	0.000E+00	0.0000	7.349E-02	0.0378	6.773E-05	0.0000	1.869E-04	0.0001	7.071E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.081E+00	0.5562
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.820E-01	0.3509
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.807E-01	0.0930
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.109E+00	0.5706	6.862E-04	0.0004	0.000E+00	0.0000	4.717E-02	0.0243	4.233E-05	0.0000	1.232E-04	0.0001	1.985E-04	0.0001
Th-228	3.299E-01	0.1697	3.411E-04	0.0002	0.000E+00	0.0000	1.511E-04	0.0001	3.400E-07	0.0000	5.993E-08	0.0000	3.247E-05	0.0000
Th-232	4.233E-01	0.2178	5.922E-03	0.0030	0.000E+00	0.0000	2.617E-02	0.0135	2.506E-05	0.0000	6.356E-05	0.0000	4.760E-04	0.0002
Total	1.862E+00	0.9581	6.950E-03	0.0036	0.000E+00	0.0000	7.349E-02	0.0378	6.773E-05	0.0000	1.869E-04	0.0001	7.071E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.157E+00	0.5954
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.304E-01	0.1700
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.559E-01	0.2346
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.504E-01	0.3346	4.745E-04	0.0002	0.000E+00	0.0000	2.037E-02	0.0105	1.838E-05	0.0000	5.303E-05	0.0000	1.025E-04	0.0001
Th-228	2.612E-02	0.0134	2.701E-05	0.0000	0.000E+00	0.0000	1.196E-05	0.0000	2.691E-08	0.0000	4.744E-09	0.0000	2.571E-06	0.0000
Th-232	1.186E+00	0.6100	6.448E-03	0.0033	0.000E+00	0.0000	5.311E-02	0.0273	4.932E-05	0.0000	1.338E-04	0.0001	6.020E-04	0.0003
Total	1.862E+00	0.9581	6.950E-03	0.0036	0.000E+00	0.0000	7.349E-02	0.0378	6.773E-05	0.0000	1.869E-04	0.0001	7.071E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.714E-01	0.3455
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.616E-02	0.0135
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.246E+00	0.6411
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.184E-02	0.0318	4.617E-05	0.0000	0.000E+00	0.0000	1.829E-03	0.0009	1.653E-06	0.0000	4.759E-06	0.0000	9.537E-06	0.0000
Th-228	1.861E-05	0.0000	1.925E-08	0.0000	0.000E+00	0.0000	8.524E-09	0.0000	1.918E-11	0.0000	3.382E-12	0.0000	1.832E-09	0.0000
Th-232	1.800E+00	0.9263	6.903E-03	0.0036	0.000E+00	0.0000	7.166E-02	0.0369	6.607E-05	0.0000	1.821E-04	0.0001	6.975E-04	0.0004
Total	1.862E+00	0.9581	6.950E-03	0.0036	0.000E+00	0.0000	7.349E-02	0.0378	6.773E-05	0.0000	1.869E-04	0.0001	7.071E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.373E-02	0.0328
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.864E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.880E+00	0.9672
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.339E-05	0.0000	9.998E-09	0.0000	0.000E+00	0.0000	3.958E-07	0.0000	3.577E-10	0.0000	1.030E-09	0.0000	2.064E-09	0.0000
Th-228	1.800E-16	0.0000	1.861E-19	0.0000	0.000E+00	0.0000	8.241E-20	0.0000	1.855E-22	0.0000	3.270E-23	0.0000	1.772E-20	0.0000
Th-232	1.862E+00	0.9581	6.949E-03	0.0036	0.000E+00	0.0000	7.349E-02	0.0378	6.772E-05	0.0000	1.868E-04	0.0001	7.070E-04	0.0004
Total	1.862E+00	0.9581	6.949E-03	0.0036	0.000E+00	0.0000	7.349E-02	0.0378	6.772E-05	0.0000	1.868E-04	0.0001	7.070E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.803E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.944E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.529E-16	0.0000	3.382E-19	0.0000	0.000E+00	0.0000	1.339E-17	0.0000	1.210E-20	0.0000	3.483E-20	0.0000	6.982E-20	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.862E+00	0.9581	6.949E-03	0.0036	0.000E+00	0.0000	7.348E-02	0.0378	6.772E-05	0.0000	1.868E-04	0.0001	7.070E-04	0.0004
Total	1.862E+00	0.9581	6.949E-03	0.0036	0.000E+00	0.0000	7.348E-02	0.0378	6.772E-05	0.0000	1.868E-04	0.0001	7.070E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.667E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	1.862E+00	0.9581	6.948E-03	0.0036	0.000E+00	0.0000	7.347E-02	0.0378	6.771E-05	0.0000	1.868E-04	0.0001	7.069E-04	0.0004
Total	1.862E+00	0.9581	6.948E-03	0.0036	0.000E+00	0.0000	7.347E-02	0.0378	6.771E-05	0.0000	1.868E-04	0.0001	7.069E-04	0.0004

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	7.231E-01	6.409E-01	5.036E-01	2.166E-01	1.943E-02	4.205E-06	1.422E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	1.810E-01	4.400E-01	6.536E-01	4.548E-01	4.430E-02	9.592E-06	3.245E-16	0.000E+00
Ra-228+D	ΣDSR(j)		9.041E-01	1.081E+00	1.157E+00	6.714E-01	6.373E-02	1.380E-05	4.667E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	9.797E-01	6.820E-01	3.304E-01	2.616E-02	1.864E-05	1.803E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	7.989E-03	7.989E-03	7.989E-03	7.989E-03	7.989E-03	7.989E-03	7.989E-03	7.987E-03
Th-232	Ra-228+D	1.000E+00	4.420E-02	1.263E-01	2.636E-01	5.506E-01	7.478E-01	7.672E-01	7.672E-01	7.670E-01
Th-232	Th-228+D	1.000E+00	7.576E-03	4.641E-02	1.843E-01	6.874E-01	1.124E+00	1.168E+00	1.168E+00	1.168E+00
Th-232	ΣDSR(j)		5.977E-02	1.807E-01	4.559E-01	1.246E+00	1.880E+00	1.944E+00	1.943E+00	1.943E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	2.765E+01	2.313E+01	2.160E+01	3.723E+01	3.922E+02	1.812E+06	*2.726E+14	*2.726E+14	
Th-228	2.552E+01	3.666E+01	7.566E+01	9.558E+02	1.341E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	4.183E+02	1.384E+02	5.483E+01	2.006E+01	1.330E+01	1.286E+01	1.286E+01	1.287E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.2132 ± 0.0004 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.567 ± 0.005	1.162E+00	2.152E+01	9.531E-01	2.623E+01
Th-228	1.000E+00	0.000E+00	9.797E-01	2.552E+01	9.069E-01	2.757E+01
Th-232	1.000E+00	110.8 ± 0.2	1.944E+00	1.286E+01	8.363E-02	2.989E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	7.231E-01	6.409E-01	5.036E-01	2.166E-01	1.943E-02	4.205E-06	1.422E-16	0.000E+00
Ra-228	Th-232	1.000E+00	4.420E-02	1.263E-01	2.636E-01	5.506E-01	7.478E-01	7.672E-01	7.672E-01	7.670E-01
Ra-228	ΣDOSE(j)		7.673E-01	7.672E-01	7.672E-01	7.672E-01	7.672E-01	7.672E-01	7.672E-01	7.670E-01
Th-228	Ra-228	1.000E+00	1.810E-01	4.400E-01	6.536E-01	4.548E-01	4.430E-02	9.592E-06	3.245E-16	0.000E+00
Th-228	Th-228	1.000E+00	9.797E-01	6.820E-01	3.304E-01	2.616E-02	1.864E-05	1.803E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	7.576E-03	4.641E-02	1.843E-01	6.874E-01	1.124E+00	1.168E+00	1.168E+00	1.168E+00
Th-228	ΣDOSE(j)		1.168E+00	1.168E+00	1.168E+00	1.168E+00	1.168E+00	1.168E+00	1.168E+00	1.168E+00
Th-232	Th-232	1.000E+00	7.989E-03	7.989E-03	7.989E-03	7.989E-03	7.989E-03	7.989E-03	7.989E-03	7.987E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.34 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	100.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.968E+00	3.968E+00	3.968E+00	3.968E+00	3.968E+00	3.968E+00	3.968E+00	3.967E+00
M(t):	1.587E-01	1.587E-01	1.587E-01	1.587E-01	1.587E-01	1.587E-01	1.587E-01	1.587E-01

Maximum TDOSE(t): 3.968E+00 mrem/yr at t = 0.1970 ± 0.0004 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.970E-01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.517E+00	0.3822	3.452E-04	0.0001	0.000E+00	0.0000	6.583E-01	0.1659	5.865E-04	0.0001	1.726E-03	0.0004	2.122E-03	0.0005
Th-228	1.581E+00	0.3983	1.216E-03	0.0003	0.000E+00	0.0000	4.171E-03	0.0011	9.386E-06	0.0000	1.655E-06	0.0000	8.966E-04	0.0002
Th-232	1.172E-01	0.0295	7.414E-03	0.0019	0.000E+00	0.0000	7.247E-02	0.0183	8.138E-05	0.0000	1.404E-04	0.0000	4.052E-03	0.0010
Total	3.215E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.349E-01	0.1852	6.773E-04	0.0002	1.869E-03	0.0005	7.071E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.970E-01 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.180E+00	0.5493
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.587E+00	0.3999
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.014E-01	0.0508
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.435E+00	0.3616	2.624E-04	0.0001	0.000E+00	0.0000	6.734E-01	0.1697	5.993E-04	0.0002	1.768E-03	0.0004	2.106E-03	0.0005
Th-228	1.698E+00	0.4278	1.306E-03	0.0003	0.000E+00	0.0000	4.479E-03	0.0011	1.008E-05	0.0000	1.777E-06	0.0000	9.629E-04	0.0002
Th-232	8.218E-02	0.0207	7.406E-03	0.0019	0.000E+00	0.0000	5.689E-02	0.0143	6.814E-05	0.0000	1.004E-04	0.0000	4.002E-03	0.0010
Total	3.215E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.348E-01	0.1852	6.775E-04	0.0002	1.870E-03	0.0005	7.071E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.113E+00	0.5325
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.704E+00	0.4295
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.506E-01	0.0380
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.756E+00	0.4426	6.053E-04	0.0002	0.000E+00	0.0000	5.985E-01	0.1508	5.346E-04	0.0001	1.568E-03	0.0004	2.142E-03	0.0005
Th-228	1.182E+00	0.2978	9.093E-04	0.0002	0.000E+00	0.0000	3.118E-03	0.0008	7.017E-06	0.0000	1.237E-06	0.0000	6.702E-04	0.0002
Th-232	2.768E-01	0.0697	7.461E-03	0.0019	0.000E+00	0.0000	1.333E-01	0.0336	1.356E-04	0.0000	2.997E-04	0.0001	4.259E-03	0.0011
Total	3.215E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.349E-01	0.1852	6.773E-04	0.0002	1.869E-03	0.0005	7.071E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.360E+00	0.5946
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.186E+00	0.2990
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.222E-01	0.1064
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.914E+00	0.4822	8.861E-04	0.0002	0.000E+00	0.0000	4.717E-01	0.1189	4.233E-04	0.0001	1.232E-03	0.0003	1.985E-03	0.0005
Th-228	5.725E-01	0.1443	4.406E-04	0.0001	0.000E+00	0.0000	1.511E-03	0.0004	3.400E-06	0.0000	5.993E-07	0.0000	3.247E-04	0.0001
Th-232	7.287E-01	0.1836	7.648E-03	0.0019	0.000E+00	0.0000	2.617E-01	0.0659	2.506E-04	0.0001	6.356E-04	0.0002	4.760E-03	0.0012
Total	3.215E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.349E-01	0.1852	6.773E-04	0.0002	1.869E-03	0.0005	7.071E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.390E+00	0.6022
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.748E-01	0.1449
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.004E+00	0.2529
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.124E+00	0.2832	6.128E-04	0.0002	0.000E+00	0.0000	2.037E-01	0.0513	1.838E-04	0.0000	5.303E-04	0.0001	1.025E-03	0.0003
Th-228	4.532E-02	0.0114	3.488E-05	0.0000	0.000E+00	0.0000	1.196E-04	0.0000	2.691E-07	0.0000	4.744E-08	0.0000	2.571E-05	0.0000
Th-232	2.045E+00	0.5154	8.328E-03	0.0021	0.000E+00	0.0000	5.311E-01	0.1338	4.932E-04	0.0001	1.338E-03	0.0003	6.020E-03	0.0015
Total	3.215E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.349E-01	0.1852	6.773E-04	0.0002	1.869E-03	0.0005	7.071E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.330E+00	0.3352
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.551E-02	0.0115
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.593E+00	0.6534
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.069E-01	0.0269	5.963E-05	0.0000	0.000E+00	0.0000	1.829E-02	0.0046	1.653E-05	0.0000	4.759E-05	0.0000	9.537E-05	0.0000
Th-228	3.231E-05	0.0000	2.486E-08	0.0000	0.000E+00	0.0000	8.524E-08	0.0000	1.918E-10	0.0000	3.382E-11	0.0000	1.832E-08	0.0000
Th-232	3.108E+00	0.7832	8.915E-03	0.0022	0.000E+00	0.0000	7.166E-01	0.1806	6.607E-04	0.0002	1.821E-03	0.0005	6.975E-03	0.0018
Total	3.215E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.349E-01	0.1852	6.773E-04	0.0002	1.869E-03	0.0005	7.071E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E-01	0.0316
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.244E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.843E+00	0.9684
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.314E-05	0.0000	1.291E-08	0.0000	0.000E+00	0.0000	3.958E-06	0.0000	3.577E-09	0.0000	1.030E-08	0.0000	2.064E-08	0.0000
Th-228	3.124E-16	0.0000	2.404E-19	0.0000	0.000E+00	0.0000	8.241E-19	0.0000	1.855E-21	0.0000	3.270E-22	0.0000	1.772E-19	0.0000
Th-232	3.215E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.349E-01	0.1852	6.772E-04	0.0002	1.868E-03	0.0005	7.070E-03	0.0018
Total	3.215E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.349E-01	0.1852	6.772E-04	0.0002	1.868E-03	0.0005	7.070E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.715E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.136E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	7.828E-16	0.0000	4.367E-19	0.0000	0.000E+00	0.0000	1.339E-16	0.0000	1.210E-19	0.0000	3.483E-19	0.0000	6.982E-19	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.214E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.348E-01	0.1852	6.772E-04	0.0002	1.868E-03	0.0005	7.070E-03	0.0018
Total	3.214E+00	0.8101	8.975E-03	0.0023	0.000E+00	0.0000	7.348E-01	0.1852	6.772E-04	0.0002	1.868E-03	0.0005	7.070E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.182E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.968E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.214E+00	0.8101	8.973E-03	0.0023	0.000E+00	0.0000	7.347E-01	0.1852	6.771E-04	0.0002	1.868E-03	0.0005	7.069E-03	0.0018
Total	3.214E+00	0.8101	8.973E-03	0.0023	0.000E+00	0.0000	7.347E-01	0.1852	6.771E-04	0.0002	1.868E-03	0.0005	7.069E-03	0.0018

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.967E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.967E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.795E+00	1.591E+00	1.250E+00	5.376E-01	4.824E-02	1.044E-05	3.531E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.182E-01	7.687E-01	1.140E+00	7.924E-01	7.717E-02	1.671E-05	5.652E-16	0.000E+00
Ra-228+D	ΣDSR(j)		2.113E+00	2.360E+00	2.390E+00	1.330E+00	1.254E-01	2.715E-05	9.182E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.704E+00	1.186E+00	5.748E-01	4.551E-02	3.244E-05	3.136E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	2.946E-02	2.946E-02	2.946E-02	2.946E-02	2.946E-02	2.946E-02	2.945E-02	2.945E-02
Th-232	Ra-228+D	1.000E+00	1.078E-01	3.114E-01	6.522E-01	1.365E+00	1.854E+00	1.902E+00	1.902E+00	1.902E+00
Th-232	Th-228+D	1.000E+00	1.339E-02	8.134E-02	3.220E-01	1.199E+00	1.959E+00	2.036E+00	2.036E+00	2.036E+00
Th-232	ΣDSR(j)		1.506E-01	4.222E-01	1.004E+00	2.593E+00	3.843E+00	3.968E+00	3.968E+00	3.967E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.183E+01	1.059E+01	1.046E+01	1.880E+01	1.994E+02	9.209E+05	*2.726E+14	*2.726E+14	
Th-228	1.467E+01	2.107E+01	4.349E+01	5.494E+02	7.708E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	1.660E+02	5.921E+01	2.491E+01	9.642E+00	6.506E+00	6.300E+00	6.301E+00	6.302E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.1970 ± 0.0004 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.059 ± 0.004	2.430E+00	1.029E+01	2.180E+00	1.147E+01
Th-228	1.000E+00	0.000E+00	1.704E+00	1.467E+01	1.587E+00	1.575E+01
Th-232	1.000E+00	108.0 ± 0.2	3.968E+00	6.300E+00	2.014E-01	1.241E+02

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.795E+00	1.591E+00	1.250E+00	5.376E-01	4.824E-02	1.044E-05	3.531E-16	0.000E+00
Ra-228	Th-232	1.000E+00	1.078E-01	3.114E-01	6.522E-01	1.365E+00	1.854E+00	1.902E+00	1.902E+00	1.902E+00
Ra-228	ΣDOSE(j)		1.903E+00	1.902E+00	1.902E+00	1.902E+00	1.902E+00	1.902E+00	1.902E+00	1.902E+00
Th-228	Ra-228	1.000E+00	3.182E-01	7.687E-01	1.140E+00	7.924E-01	7.717E-02	1.671E-05	5.652E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.704E+00	1.186E+00	5.748E-01	4.551E-02	3.244E-05	3.136E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.339E-02	8.134E-02	3.220E-01	1.199E+00	1.959E+00	2.036E+00	2.036E+00	2.036E+00
Th-228	ΣDOSE(j)		2.036E+00	2.036E+00	2.036E+00	2.036E+00	2.036E+00	2.036E+00	2.036E+00	2.036E+00
Th-232	Th-232	1.000E+00	2.946E-02	2.946E-02	2.946E-02	2.946E-02	2.946E-02	2.946E-02	2.945E-02	2.945E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.36 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Uniform Th-232+C CSM - AF 1,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1000.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.111E+01	1.112E+01	1.112E+01	1.112E+01	1.112E+01	1.112E+01	1.112E+01	1.111E+01
M(t):	4.446E-01	4.447E-01	4.446E-01	4.446E-01	4.446E-01	4.446E-01	4.446E-01	4.445E-01

Maximum TDOSE(t): 1.112E+01 mrem/yr at t = 0.2350 ± 0.0005 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.350E-01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.739E+00	0.1565	4.635E-04	0.0000	0.000E+00	0.0000	6.553E+00	0.5895	5.839E-03	0.0005	1.719E-02	0.0015	2.125E-02	0.0019
Th-228	1.779E+00	0.1601	1.544E-03	0.0001	0.000E+00	0.0000	4.114E-02	0.0037	9.258E-05	0.0000	1.632E-05	0.0000	8.843E-03	0.0008
Th-232	1.410E-01	0.0127	9.541E-03	0.0009	0.000E+00	0.0000	7.549E-01	0.0679	8.406E-04	0.0001	1.483E-03	0.0001	4.061E-02	0.0037
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.349E+00	0.6611	6.773E-03	0.0006	1.869E-02	0.0017	7.071E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.350E-01 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.337E+00	0.7500
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.831E+00	0.1647
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.484E-01	0.0853
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.629E+00	0.1465	3.377E-04	0.0000	0.000E+00	0.0000	6.734E+00	0.6058	5.993E-03	0.0005	1.768E-02	0.0016	2.106E-02	0.0019
Th-228	1.937E+00	0.1743	1.681E-03	0.0002	0.000E+00	0.0000	4.479E-02	0.0040	1.008E-04	0.0000	1.777E-05	0.0000	9.629E-03	0.0009
Th-232	9.324E-02	0.0084	9.530E-03	0.0009	0.000E+00	0.0000	5.689E-01	0.0512	6.814E-04	0.0001	1.004E-03	0.0001	4.002E-02	0.0036
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.348E+00	0.6611	6.775E-03	0.0006	1.870E-02	0.0017	7.071E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.408E+00	0.7564
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.994E+00	0.1794
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.134E-01	0.0642
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.111E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.997E+00	0.1796	7.789E-04	0.0001	0.000E+00	0.0000	5.985E+00	0.5384	5.346E-03	0.0005	1.568E-02	0.0014	2.142E-02	0.0019
Th-228	1.349E+00	0.1213	1.170E-03	0.0001	0.000E+00	0.0000	3.118E-02	0.0028	7.017E-05	0.0000	1.237E-05	0.0000	6.702E-03	0.0006
Th-232	3.143E-01	0.0283	9.600E-03	0.0009	0.000E+00	0.0000	1.333E+00	0.1199	1.356E-03	0.0001	2.997E-03	0.0003	4.259E-02	0.0038
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.349E+00	0.6611	6.773E-03	0.0006	1.869E-02	0.0017	7.071E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.025E+00	0.7219
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.388E+00	0.1248
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.703E+00	0.1532
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.178E+00	0.1959	1.140E-03	0.0001	0.000E+00	0.0000	4.717E+00	0.4243	4.233E-03	0.0004	1.232E-02	0.0011	1.985E-02	0.0018
Th-228	6.534E-01	0.0588	5.669E-04	0.0001	0.000E+00	0.0000	1.511E-02	0.0014	3.400E-05	0.0000	5.993E-06	0.0000	3.247E-03	0.0003
Th-232	8.284E-01	0.0745	9.841E-03	0.0009	0.000E+00	0.0000	2.617E+00	0.2354	2.506E-03	0.0002	6.356E-03	0.0006	4.760E-02	0.0043
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.349E+00	0.6611	6.773E-03	0.0006	1.869E-02	0.0017	7.071E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.932E+00	0.6236
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.724E-01	0.0605
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.512E+00	0.3159
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.280E+00	0.1152	7.884E-04	0.0001	0.000E+00	0.0000	2.037E+00	0.1832	1.838E-03	0.0002	5.303E-03	0.0005	1.025E-02	0.0009
Th-228	5.173E-02	0.0047	4.488E-05	0.0000	0.000E+00	0.0000	1.196E-03	0.0001	2.691E-06	0.0000	4.744E-07	0.0000	2.571E-04	0.0000
Th-232	2.328E+00	0.2094	1.072E-02	0.0010	0.000E+00	0.0000	5.311E+00	0.4778	4.932E-03	0.0004	1.338E-02	0.0012	6.020E-02	0.0054
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.349E+00	0.6611	6.773E-03	0.0006	1.869E-02	0.0017	7.071E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.335E+00	0.3000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.323E-02	0.0048
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.728E+00	0.6952
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.218E-01	0.0110	7.673E-05	0.0000	0.000E+00	0.0000	1.829E-01	0.0165	1.653E-04	0.0000	4.759E-04	0.0000	9.537E-04	0.0001
Th-228	3.687E-05	0.0000	3.199E-08	0.0000	0.000E+00	0.0000	8.524E-07	0.0000	1.918E-09	0.0000	3.382E-10	0.0000	1.832E-07	0.0000
Th-232	3.538E+00	0.3182	1.147E-02	0.0010	0.000E+00	0.0000	7.166E+00	0.6447	6.607E-03	0.0006	1.821E-02	0.0016	6.975E-02	0.0063
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.349E+00	0.6611	6.773E-03	0.0006	1.869E-02	0.0017	7.071E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.063E-01	0.0276
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.794E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.081E+01	0.9724
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.636E-05	0.0000	1.661E-08	0.0000	0.000E+00	0.0000	3.958E-05	0.0000	3.577E-08	0.0000	1.030E-07	0.0000	2.064E-07	0.0000
Th-228	3.565E-16	0.0000	3.093E-19	0.0000	0.000E+00	0.0000	8.241E-18	0.0000	1.855E-20	0.0000	3.270E-21	0.0000	1.772E-18	0.0000
Th-232	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.349E+00	0.6611	6.772E-03	0.0006	1.868E-02	0.0017	7.070E-02	0.0064
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.349E+00	0.6611	6.772E-03	0.0006	1.868E-02	0.0017	7.070E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.630E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.668E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.916E-16	0.0000	5.620E-19	0.0000	0.000E+00	0.0000	1.339E-15	0.0000	1.210E-18	0.0000	3.483E-18	0.0000	6.982E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.348E+00	0.6611	6.772E-03	0.0006	1.868E-02	0.0017	7.070E-02	0.0064
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.348E+00	0.6611	6.772E-03	0.0006	1.868E-02	0.0017	7.070E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.242E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.347E+00	0.6611	6.771E-03	0.0006	1.868E-02	0.0017	7.069E-02	0.0064
Total	3.659E+00	0.3292	1.155E-02	0.0010	0.000E+00	0.0000	7.347E+00	0.6611	6.771E-03	0.0006	1.868E-02	0.0017	7.069E-02	0.0064

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.111E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.111E+01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	8.000E+00	7.092E+00	5.572E+00	2.396E+00	2.150E-01	4.653E-05	1.574E-15	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	4.074E-01	9.334E-01	1.360E+00	9.384E-01	9.130E-02	1.977E-05	6.687E-16	0.000E+00
Ra-228+D	ΣDSR(j)		8.408E+00	8.025E+00	6.932E+00	3.335E+00	3.063E-01	6.630E-05	2.242E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.994E+00	1.388E+00	6.724E-01	5.323E-02	3.794E-05	3.668E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	2.292E-01	2.292E-01	2.292E-01	2.292E-01	2.292E-01	2.291E-01	2.291E-01	2.291E-01
Th-232	Ra-228+D	1.000E+00	4.664E-01	1.373E+00	2.892E+00	6.068E+00	8.249E+00	8.464E+00	8.464E+00	8.462E+00
Th-232	Th-228+D	1.000E+00	1.786E-02	1.017E-01	3.905E-01	1.431E+00	2.331E+00	2.423E+00	2.423E+00	2.422E+00
Th-232	ΣDSR(j)		7.134E-01	1.703E+00	3.512E+00	7.728E+00	1.081E+01	1.112E+01	1.112E+01	1.111E+01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	2.973E+00	3.115E+00	3.606E+00	7.497E+00	8.161E+01	3.771E+05	*2.726E+14	*2.726E+14	
Th-228	1.254E+01	1.802E+01	3.718E+01	4.697E+02	6.589E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	3.504E+01	1.468E+01	7.119E+00	3.235E+00	2.313E+00	2.249E+00	2.249E+00	2.250E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.2350 ± 0.0005 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	8.408E+00	2.973E+00	8.337E+00	2.999E+00
Th-228	1.000E+00	0.000E+00	1.994E+00	1.254E+01	1.831E+00	1.365E+01
Th-232	1.000E+00	108.1 ± 0.2	1.112E+01	2.249E+00	9.484E-01	2.636E+01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	8.000E+00	7.092E+00	5.572E+00	2.396E+00	2.150E-01	4.653E-05	1.574E-15	0.000E+00
Ra-228	Th-232	1.000E+00	4.664E-01	1.373E+00	2.892E+00	6.068E+00	8.249E+00	8.464E+00	8.464E+00	8.462E+00
Ra-228	ΣDOSE(j)		8.467E+00	8.464E+00	8.464E+00	8.464E+00	8.464E+00	8.464E+00	8.464E+00	8.462E+00
Th-228	Ra-228	1.000E+00	4.074E-01	9.334E-01	1.360E+00	9.384E-01	9.130E-02	1.977E-05	6.687E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.994E+00	1.388E+00	6.724E-01	5.323E-02	3.794E-05	3.668E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.786E-02	1.017E-01	3.905E-01	1.431E+00	2.331E+00	2.423E+00	2.423E+00	2.422E+00
Th-228	ΣDOSE(j)		2.419E+00	2.423E+00	2.423E+00	2.423E+00	2.423E+00	2.423E+00	2.423E+00	2.422E+00
Th-232	Th-232	1.000E+00	2.292E-01	2.292E-01	2.292E-01	2.292E-01	2.292E-01	2.291E-01	2.291E-01	2.291E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.50 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.500E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.500E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10000.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.153E+01	1.153E+01	1.153E+01	1.153E+01	1.153E+01	1.153E+01	1.153E+01	1.153E+01
M(t):	4.611E-01	4.612E-01	4.612E-01	4.612E-01	4.612E-01	4.612E-01	4.611E-01	4.611E-01

Maximum TDOSE(t): 1.153E+01 mrem/yr at t = 0.1971 ± 0.0004 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.971E-01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.809E+00	0.1569	5.689E-04	0.0000	0.000E+00	0.0000	6.583E+00	0.5709	5.865E-02	0.0051	1.726E-01	0.0150	2.122E-02	0.0018
Th-228	1.891E+00	0.1640	2.004E-03	0.0002	0.000E+00	0.0000	4.171E-02	0.0036	9.386E-04	0.0001	1.655E-04	0.0000	8.965E-03	0.0008
Th-232	1.398E-01	0.0121	1.222E-02	0.0011	0.000E+00	0.0000	7.248E-01	0.0629	8.138E-03	0.0007	1.404E-02	0.0012	4.052E-02	0.0035
Total	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.349E+00	0.6374	6.773E-02	0.0059	1.869E-01	0.0162	7.071E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.971E-01 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.645E+00	0.7498
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.945E+00	0.1687
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.395E-01	0.0815
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.711E+00	0.1484	4.324E-04	0.0000	0.000E+00	0.0000	6.734E+00	0.5841	5.993E-02	0.0052	1.768E-01	0.0153	2.106E-02	0.0018
Th-228	2.031E+00	0.1762	2.153E-03	0.0002	0.000E+00	0.0000	4.479E-02	0.0039	1.008E-03	0.0001	1.777E-04	0.0000	9.629E-03	0.0008
Th-232	9.795E-02	0.0085	1.221E-02	0.0011	0.000E+00	0.0000	5.689E-01	0.0494	6.814E-03	0.0006	1.004E-02	0.0009	4.002E-02	0.0035
Total	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.348E+00	0.6374	6.775E-02	0.0059	1.870E-01	0.0162	7.071E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.703E+00	0.7549
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.089E+00	0.1812
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.360E-01	0.0638
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.096E+00	0.1818	9.975E-04	0.0001	0.000E+00	0.0000	5.985E+00	0.5191	5.346E-02	0.0046	1.568E-01	0.0136	2.142E-02	0.0019
Th-228	1.414E+00	0.1226	1.498E-03	0.0001	0.000E+00	0.0000	3.118E-02	0.0027	7.017E-04	0.0001	1.237E-04	0.0000	6.702E-03	0.0006
Th-232	3.301E-01	0.0286	1.229E-02	0.0011	0.000E+00	0.0000	1.333E+00	0.1156	1.356E-02	0.0012	2.997E-02	0.0026	4.259E-02	0.0037
Total	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.349E+00	0.6374	6.773E-02	0.0059	1.869E-01	0.0162	7.071E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.314E+00	0.7211
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.454E+00	0.1261
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.761E+00	0.1528
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.285E+00	0.1982	1.460E-03	0.0001	0.000E+00	0.0000	4.717E+00	0.4091	4.233E-02	0.0037	1.232E-01	0.0107	1.985E-02	0.0017
Th-228	6.851E-01	0.0594	7.260E-04	0.0001	0.000E+00	0.0000	1.511E-02	0.0013	3.400E-04	0.0000	5.993E-05	0.0000	3.247E-03	0.0003
Th-232	8.697E-01	0.0754	1.260E-02	0.0011	0.000E+00	0.0000	2.617E+00	0.2270	2.506E-02	0.0022	6.356E-02	0.0055	4.760E-02	0.0041
Total	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.349E+00	0.6374	6.773E-02	0.0059	1.869E-01	0.0162	7.071E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.189E+00	0.6236
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.045E-01	0.0611
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.635E+00	0.3153
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.343E+00	0.1165	1.010E-03	0.0001	0.000E+00	0.0000	2.037E+00	0.1766	1.838E-02	0.0016	5.303E-02	0.0046	1.025E-02	0.0009
Th-228	5.423E-02	0.0047	5.747E-05	0.0000	0.000E+00	0.0000	1.196E-03	0.0001	2.691E-05	0.0000	4.744E-06	0.0000	2.571E-04	0.0000
Th-232	2.443E+00	0.2119	1.372E-02	0.0012	0.000E+00	0.0000	5.311E+00	0.4607	4.932E-02	0.0043	1.338E-01	0.0116	6.020E-02	0.0052
Total	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.349E+00	0.6374	6.773E-02	0.0059	1.869E-01	0.0162	7.071E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.462E+00	0.3003
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.578E-02	0.0048
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.011E+00	0.6949
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.277E-01	0.0111	9.827E-05	0.0000	0.000E+00	0.0000	1.829E-01	0.0159	1.653E-03	0.0001	4.759E-03	0.0004	9.537E-04	0.0001
Th-228	3.866E-05	0.0000	4.097E-08	0.0000	0.000E+00	0.0000	8.524E-07	0.0000	1.918E-08	0.0000	3.382E-09	0.0000	1.832E-07	0.0000
Th-232	3.712E+00	0.3220	1.469E-02	0.0013	0.000E+00	0.0000	7.166E+00	0.6216	6.607E-02	0.0057	1.821E-01	0.0158	6.975E-02	0.0061
Total	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.349E+00	0.6374	6.773E-02	0.0059	1.869E-01	0.0162	7.071E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.181E-01	0.0276
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.976E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.121E+01	0.9724
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.766E-05	0.0000	2.128E-08	0.0000	0.000E+00	0.0000	3.958E-05	0.0000	3.577E-07	0.0000	1.030E-06	0.0000	2.064E-07	0.0000
Th-228	3.737E-16	0.0000	3.961E-19	0.0000	0.000E+00	0.0000	8.242E-18	0.0000	1.855E-19	0.0000	3.270E-20	0.0000	1.772E-18	0.0000
Th-232	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.349E+00	0.6374	6.772E-02	0.0059	1.868E-01	0.0162	7.070E-02	0.0061
Total	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.349E+00	0.6374	6.772E-02	0.0059	1.868E-01	0.0162	7.070E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.885E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.844E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.354E-16	0.0000	7.197E-19	0.0000	0.000E+00	0.0000	1.339E-15	0.0000	1.210E-17	0.0000	3.483E-17	0.0000	6.982E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.348E+00	0.6374	6.772E-02	0.0059	1.868E-01	0.0162	7.070E-02	0.0061
Total	3.840E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.348E+00	0.6374	6.772E-02	0.0059	1.868E-01	0.0162	7.070E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.329E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.839E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.347E+00	0.6374	6.771E-02	0.0059	1.868E-01	0.0162	7.069E-02	0.0061
Total	3.839E+00	0.3331	1.479E-02	0.0013	0.000E+00	0.0000	7.347E+00	0.6374	6.771E-02	0.0059	1.868E-01	0.0162	7.069E-02	0.0061

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.153E+01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	8.277E+00	7.337E+00	5.765E+00	2.479E+00	2.225E-01	4.814E-05	1.628E-15	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	4.257E-01	9.768E-01	1.424E+00	9.829E-01	9.563E-02	2.071E-05	7.004E-16	0.000E+00
Ra-228+D	ΣDSR(j)		8.703E+00	8.314E+00	7.189E+00	3.462E+00	3.181E-01	6.885E-05	2.329E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	2.089E+00	1.454E+00	7.045E-01	5.578E-02	3.976E-05	3.844E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	2.361E-01	2.361E-01	2.361E-01	2.361E-01	2.361E-01	2.361E-01	2.361E-01	2.361E-01
Th-232	Ra-228+D	1.000E+00	4.812E-01	1.419E+00	2.991E+00	6.276E+00	8.533E+00	8.756E+00	8.755E+00	8.754E+00
Th-232	Th-228+D	1.000E+00	1.863E-02	1.063E-01	4.087E-01	1.499E+00	2.442E+00	2.537E+00	2.537E+00	2.537E+00
Th-232	ΣDSR(j)		7.360E-01	1.761E+00	3.635E+00	8.011E+00	1.121E+01	1.153E+01	1.153E+01	1.153E+01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	2.873E+00	3.007E+00	3.477E+00	7.221E+00	7.859E+01	3.631E+05	*2.726E+14	*2.726E+14	
Th-228	1.197E+01	1.719E+01	3.548E+01	4.482E+02	6.288E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	3.397E+01	1.420E+01	6.877E+00	3.121E+00	2.230E+00	2.168E+00	2.169E+00	2.169E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.1971 ± 0.0004 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	8.703E+00	2.873E+00	8.645E+00	2.892E+00
Th-228	1.000E+00	0.000E+00	2.089E+00	1.197E+01	1.945E+00	1.285E+01
Th-232	1.000E+00	107.6 ± 0.2	1.153E+01	2.168E+00	9.395E-01	2.661E+01

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	8.277E+00	7.337E+00	5.765E+00	2.479E+00	2.225E-01	4.814E-05	1.628E-15	0.000E+00
Ra-228	Th-232	1.000E+00	4.812E-01	1.419E+00	2.991E+00	6.276E+00	8.533E+00	8.756E+00	8.755E+00	8.754E+00
Ra-228	ΣDOSE(j)		8.758E+00	8.756E+00	8.756E+00	8.756E+00	8.756E+00	8.756E+00	8.755E+00	8.754E+00
Th-228	Ra-228	1.000E+00	4.257E-01	9.768E-01	1.424E+00	9.829E-01	9.563E-02	2.071E-05	7.004E-16	0.000E+00
Th-228	Th-228	1.000E+00	2.089E+00	1.454E+00	7.045E-01	5.578E-02	3.976E-05	3.844E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.863E-02	1.063E-01	4.087E-01	1.499E+00	2.442E+00	2.537E+00	2.537E+00	2.537E+00
Th-228	ΣDOSE(j)		2.533E+00	2.537E+00	2.537E+00	2.537E+00	2.537E+00	2.537E+00	2.537E+00	2.537E+00
Th-232	Th-232	1.000E+00	2.361E-01	2.361E-01	2.361E-01	2.361E-01	2.361E-01	2.361E-01	2.361E-01	2.361E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.37 seconds

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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-02	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-03	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-03	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	9.233E-01	9.233E-01	9.233E-01	9.233E-01	9.233E-01	9.233E-01	9.233E-01	9.231E-01
M(t):	3.693E-02	3.693E-02	3.693E-02	3.693E-02	3.693E-02	3.693E-02	3.693E-02	3.692E-02
Maximum TDOSE(t): 9.233E-01 mrem/yr at t = 0.2120 ± 0.0004 years								

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.120E-01 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-														
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Ra-228	4.267E-01	0.4621	2.376E-04	0.0003	0.000E+00	0.0000	1.971E-02	0.0213	1.756E-05	0.0000	5.170E-05	0.0001	6.370E-05	0.0001
Th-228	4.346E-01	0.4706	8.185E-04	0.0009	0.000E+00	0.0000	1.244E-04	0.0001	2.801E-07	0.0000	4.937E-08	0.0000	2.675E-05	0.0000
Th-232	3.369E-02	0.0365	5.016E-03	0.0054	0.000E+00	0.0000	2.210E-03	0.0024	2.473E-06	0.0000	4.306E-06	0.0000	1.217E-04	0.0001
Total	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.606E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.120E-01 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Nuclide														
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.468E-01	0.4839
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.355E-01	0.4717
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.104E-02	0.0444
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.026E-01	0.4360	1.775E-04	0.0002	0.000E+00	0.0000	2.020E-02	0.0219	1.798E-05	0.0000	5.303E-05	0.0001	6.319E-05	0.0001
Th-228	4.693E-01	0.5082	8.838E-04	0.0010	0.000E+00	0.0000	1.344E-04	0.0001	3.024E-07	0.0000	5.331E-08	0.0000	2.889E-05	0.0000
Th-232	2.308E-02	0.0250	5.011E-03	0.0054	0.000E+00	0.0000	1.707E-03	0.0018	2.044E-06	0.0000	3.010E-06	0.0000	1.200E-04	0.0001
Total	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.204E-02	0.0239	2.032E-05	0.0000	5.610E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.231E-01	0.4582
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.703E-01	0.5093
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.993E-02	0.0324
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	4.908E-01	0.5315	4.095E-04	0.0004	0.000E+00	0.0000	1.796E-02	0.0194	1.604E-05	0.0000	4.703E-05	0.0001	6.425E-05	0.0001
Th-228	3.266E-01	0.3537	6.152E-04	0.0007	0.000E+00	0.0000	9.353E-05	0.0001	2.105E-07	0.0000	3.711E-08	0.0000	2.011E-05	0.0000
Th-232	7.755E-02	0.0840	5.048E-03	0.0055	0.000E+00	0.0000	3.998E-03	0.0043	4.068E-06	0.0000	8.992E-06	0.0000	1.278E-04	0.0001
Total	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.606E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.092E-01	0.5515
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.274E-01	0.3545
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.674E-02	0.0939
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	5.331E-01	0.5773	5.995E-04	0.0006	0.000E+00	0.0000	1.415E-02	0.0153	1.270E-05	0.0000	3.697E-05	0.0000	5.956E-05	0.0001
Th-228	1.583E-01	0.1714	2.981E-04	0.0003	0.000E+00	0.0000	4.532E-05	0.0000	1.020E-07	0.0000	1.798E-08	0.0000	9.742E-06	0.0000
Th-232	2.036E-01	0.2205	5.175E-03	0.0056	0.000E+00	0.0000	7.851E-03	0.0085	7.518E-06	0.0000	1.907E-05	0.0000	1.428E-04	0.0002
Total	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.606E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.479E-01	0.5934
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.586E-01	0.1718
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.168E-01	0.2348
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	3.125E-01	0.3384	4.146E-04	0.0004	0.000E+00	0.0000	6.110E-03	0.0066	5.515E-06	0.0000	1.591E-05	0.0000	3.074E-05	0.0000
Th-228	1.253E-02	0.0136	2.360E-05	0.0000	0.000E+00	0.0000	3.588E-06	0.0000	8.074E-09	0.0000	1.423E-09	0.0000	7.712E-07	0.0000
Th-232	5.699E-01	0.6173	5.634E-03	0.0061	0.000E+00	0.0000	1.593E-02	0.0173	1.480E-05	0.0000	4.015E-05	0.0000	1.806E-04	0.0002
Total	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.606E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.190E-01	0.3455
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.256E-02	0.0136
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.917E-01	0.6409
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.971E-02	0.0322	4.035E-05	0.0000	0.000E+00	0.0000	5.487E-04	0.0006	4.959E-07	0.0000	1.428E-06	0.0000	2.861E-06	0.0000
Th-228	8.930E-06	0.0000	1.682E-08	0.0000	0.000E+00	0.0000	2.557E-09	0.0000	5.755E-12	0.0000	1.014E-12	0.0000	5.497E-10	0.0000
Th-232	8.652E-01	0.9370	6.032E-03	0.0065	0.000E+00	0.0000	2.150E-02	0.0233	1.982E-05	0.0000	5.463E-05	0.0001	2.093E-04	0.0002
Total	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.606E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.030E-02	0.0328
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.950E-06	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.930E-01	0.9672
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.431E-06	0.0000	8.736E-09	0.0000	0.000E+00	0.0000	1.187E-07	0.0000	1.073E-10	0.0000	3.089E-10	0.0000	6.193E-10	0.0000
Th-228	8.634E-17	0.0000	1.626E-19	0.0000	0.000E+00	0.0000	2.472E-20	0.0000	5.564E-23	0.0000	9.809E-24	0.0000	5.315E-21	0.0000
Th-232	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.605E-05	0.0001	2.121E-04	0.0002
Total	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.605E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.560E-06	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.653E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.175E-16	0.0000	2.955E-19	0.0000	0.000E+00	0.0000	4.016E-18	0.0000	3.630E-21	0.0000	1.045E-20	0.0000	2.095E-20	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.605E-05	0.0001	2.121E-04	0.0002
Total	8.949E-01	0.9692	6.072E-03	0.0066	0.000E+00	0.0000	2.205E-02	0.0239	2.032E-05	0.0000	5.605E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.219E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.233E-01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	8.947E-01	0.9692	6.071E-03	0.0066	0.000E+00	0.0000	2.204E-02	0.0239	2.031E-05	0.0000	5.604E-05	0.0001	2.121E-04	0.0002
Total	8.947E-01	0.9692	6.071E-03	0.0066	0.000E+00	0.0000	2.204E-02	0.0239	2.031E-05	0.0000	5.604E-05	0.0001	2.121E-04	0.0002

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.231E-01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.231E-01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	3.363E-01	2.981E-01	2.342E-01	1.007E-01	9.038E-03	1.956E-06	6.615E-17	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	8.683E-02	2.112E-01	3.137E-01	2.183E-01	2.126E-02	4.604E-06	1.557E-16	0.000E+00
Ra-228+D	ΣDSR(j)		4.231E-01	5.092E-01	5.479E-01	3.190E-01	3.030E-02	6.560E-06	2.219E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	4.703E-01	3.274E-01	1.586E-01	1.256E-02	8.950E-06	8.653E-17	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	5.695E-03	5.695E-03	5.695E-03	5.695E-03	5.695E-03	5.695E-03	5.695E-03	5.694E-03
Th-232	Ra-228+D	1.000E+00	2.060E-02	5.878E-02	1.226E-01	2.561E-01	3.478E-01	3.569E-01	3.568E-01	3.568E-01
Th-232	Th-228+D	1.000E+00	3.632E-03	2.226E-02	8.846E-02	3.299E-01	5.395E-01	5.607E-01	5.607E-01	5.606E-01
Th-232	ΣDSR(j)		2.993E-02	8.674E-02	2.168E-01	5.917E-01	8.930E-01	9.233E-01	9.233E-01	9.231E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	5.909E+01	4.909E+01	4.563E+01	7.836E+01	8.250E+02	3.811E+06	*2.726E+14	*2.726E+14	
Th-228	5.316E+01	7.637E+01	1.576E+02	1.991E+03	2.793E+06	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	8.353E+02	2.882E+02	1.153E+02	4.225E+01	2.799E+01	2.708E+01	2.708E+01	2.708E+01	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.2120 ± 0.0004 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.607 ± 0.005	5.497E-01	4.548E+01	4.468E-01	5.596E+01
Th-228	1.000E+00	0.000E+00	4.703E-01	5.316E+01	4.355E-01	5.740E+01
Th-232	1.000E+00	110.6 ± 0.2	9.233E-01	2.708E+01	4.104E-02	6.091E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	3.363E-01	2.981E-01	2.342E-01	1.007E-01	9.038E-03	1.956E-06	6.615E-17	0.000E+00
Ra-228	Th-232	1.000E+00	2.060E-02	5.878E-02	1.226E-01	2.561E-01	3.478E-01	3.569E-01	3.568E-01	3.568E-01
Ra-228	ΣDOSE(j)		3.569E-01	3.569E-01	3.569E-01	3.569E-01	3.569E-01	3.569E-01	3.568E-01	3.568E-01
Th-228	Ra-228	1.000E+00	8.683E-02	2.112E-01	3.137E-01	2.183E-01	2.126E-02	4.604E-06	1.557E-16	0.000E+00
Th-228	Th-228	1.000E+00	4.703E-01	3.274E-01	1.586E-01	1.256E-02	8.950E-06	8.653E-17	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	3.632E-03	2.226E-02	8.846E-02	3.299E-01	5.395E-01	5.607E-01	5.607E-01	5.606E-01
Th-228	ΣDOSE(j)		5.608E-01	5.608E-01	5.608E-01	5.608E-01	5.608E-01	5.608E-01	5.607E-01	5.606E-01
Th-232	Th-232	1.000E+00	5.695E-03	5.695E-03	5.695E-03	5.695E-03	5.695E-03	5.695E-03	5.695E-03	5.694E-03

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.32 seconds

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Time = 3.000E+00	11
Time = 1.000E+01	12
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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Uniform Th-232+C CSM - AF 30 m^2

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E-01	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-02	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-02	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	30.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.825E+00	2.825E+00	2.825E+00	2.825E+00	2.825E+00	2.825E+00	2.825E+00	2.825E+00
M(t):	1.130E-01	1.130E-01	1.130E-01	1.130E-01	1.130E-01	1.130E-01	1.130E-01	1.130E-01

Maximum TDOSE(t): 2.825E+00 mrem/yr at t = 0.2001 ± 0.0004 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.001E-01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.227E+00	0.4344	3.032E-04	0.0001	0.000E+00	0.0000	1.974E-01	0.0699	1.759E-04	0.0001	5.178E-04	0.0002	6.368E-04	0.0002
Th-228	1.272E+00	0.4501	1.063E-03	0.0004	0.000E+00	0.0000	1.250E-03	0.0004	2.813E-06	0.0000	4.958E-07	0.0000	2.687E-04	0.0001
Th-232	9.529E-02	0.0337	6.488E-03	0.0023	0.000E+00	0.0000	2.182E-02	0.0077	2.448E-05	0.0000	4.232E-05	0.0000	1.216E-03	0.0004
Total	2.594E+00	0.9182	7.855E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.606E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 2.001E-01 years

Water Dependent Pathways

Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.426E+00	0.5048
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.274E+00	0.4510
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.249E-01	0.0442
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.160E+00	0.4107	2.297E-04	0.0001	0.000E+00	0.0000	2.020E-01	0.0715	1.798E-04	0.0001	5.303E-04	0.0002	6.319E-04	0.0002
Th-228	1.367E+00	0.4839	1.143E-03	0.0004	0.000E+00	0.0000	1.344E-03	0.0005	3.024E-06	0.0000	5.331E-07	0.0000	2.889E-04	0.0001
Th-232	6.648E-02	0.0235	6.482E-03	0.0023	0.000E+00	0.0000	1.707E-02	0.0060	2.044E-05	0.0000	3.011E-05	0.0000	1.200E-03	0.0004
Total	2.594E+00	0.9182	7.855E-03	0.0028	0.000E+00	0.0000	2.204E-01	0.0780	2.032E-04	0.0001	5.610E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.364E+00	0.4828
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.370E+00	0.4849
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.128E-02	0.0323
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.419E+00	0.5021	5.297E-04	0.0002	0.000E+00	0.0000	1.796E-01	0.0636	1.604E-04	0.0001	4.703E-04	0.0002	6.425E-04	0.0002
Th-228	9.516E-01	0.3368	7.958E-04	0.0003	0.000E+00	0.0000	9.353E-04	0.0003	2.105E-06	0.0000	3.711E-07	0.0000	2.011E-04	0.0001
Th-232	2.238E-01	0.0792	6.529E-03	0.0023	0.000E+00	0.0000	3.998E-02	0.0142	4.068E-05	0.0000	8.992E-05	0.0000	1.278E-03	0.0005
Total	2.594E+00	0.9182	7.855E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.606E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.600E+00	0.5663
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.535E-01	0.3375
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.717E-01	0.0962
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.544E+00	0.5466	7.755E-04	0.0003	0.000E+00	0.0000	1.415E-01	0.0501	1.270E-04	0.0000	3.697E-04	0.0001	5.956E-04	0.0002
Th-228	4.611E-01	0.1632	3.856E-04	0.0001	0.000E+00	0.0000	4.532E-04	0.0002	1.020E-06	0.0000	1.798E-07	0.0000	9.742E-05	0.0000
Th-232	5.886E-01	0.2083	6.694E-03	0.0024	0.000E+00	0.0000	7.851E-02	0.0278	7.518E-05	0.0000	1.907E-04	0.0001	1.428E-03	0.0005
Total	2.594E+00	0.9182	7.855E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.606E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.688E+00	0.5974
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.620E-01	0.1635
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.755E-01	0.2391
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.066E-01	0.3209	5.363E-04	0.0002	0.000E+00	0.0000	6.110E-02	0.0216	5.515E-05	0.0000	1.591E-04	0.0001	3.074E-04	0.0001
Th-228	3.650E-02	0.0129	3.052E-05	0.0000	0.000E+00	0.0000	3.588E-05	0.0000	8.074E-08	0.0000	1.423E-08	0.0000	7.712E-06	0.0000
Th-232	1.651E+00	0.5843	7.288E-03	0.0026	0.000E+00	0.0000	1.593E-01	0.0564	1.480E-04	0.0001	4.015E-04	0.0001	1.806E-03	0.0006
Total	2.594E+00	0.9182	7.855E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.606E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.688E-01	0.3429
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.657E-02	0.0129
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.820E+00	0.6442
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.622E-02	0.0305	5.219E-05	0.0000	0.000E+00	0.0000	5.487E-03	0.0019	4.959E-06	0.0000	1.428E-05	0.0000	2.861E-05	0.0000
Th-228	2.602E-05	0.0000	2.176E-08	0.0000	0.000E+00	0.0000	2.557E-08	0.0000	5.755E-11	0.0000	1.014E-11	0.0000	5.497E-09	0.0000
Th-232	2.508E+00	0.8876	7.803E-03	0.0028	0.000E+00	0.0000	2.150E-01	0.0761	1.982E-04	0.0001	5.463E-04	0.0002	2.093E-03	0.0007
Total	2.594E+00	0.9182	7.855E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.606E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.180E-02	0.0325
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.607E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.733E+00	0.9675
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.866E-05	0.0000	1.130E-08	0.0000	0.000E+00	0.0000	1.187E-06	0.0000	1.073E-09	0.0000	3.089E-09	0.0000	6.193E-09	0.0000
Th-228	2.515E-16	0.0000	2.104E-19	0.0000	0.000E+00	0.0000	2.472E-19	0.0000	5.564E-22	0.0000	9.809E-23	0.0000	5.315E-20	0.0000
Th-232	2.594E+00	0.9182	7.855E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.605E-04	0.0002	2.121E-03	0.0008
Total	2.594E+00	0.9182	7.855E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.605E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.987E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.521E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	6.313E-16	0.0000	3.822E-19	0.0000	0.000E+00	0.0000	4.016E-17	0.0000	3.630E-20	0.0000	1.045E-19	0.0000	2.095E-19	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.594E+00	0.9182	7.854E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.605E-04	0.0002	2.121E-03	0.0008
Total	2.594E+00	0.9182	7.854E-03	0.0028	0.000E+00	0.0000	2.205E-01	0.0780	2.032E-04	0.0001	5.605E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.722E-16	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	2.593E+00	0.9182	7.853E-03	0.0028	0.000E+00	0.0000	2.204E-01	0.0780	2.031E-04	0.0001	5.604E-04	0.0002	2.121E-03	0.0008
Total	2.593E+00	0.9182	7.853E-03	0.0028	0.000E+00	0.0000	2.204E-01	0.0780	2.031E-04	0.0001	5.604E-04	0.0002	2.121E-03	0.0008

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.825E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	1.110E+00	9.842E-01	7.733E-01	3.326E-01	2.984E-02	6.457E-06	2.184E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	2.538E-01	6.159E-01	9.144E-01	6.362E-01	6.196E-02	1.342E-05	4.538E-16	0.000E+00
Ra-228+D	ΣDSR(j)		1.364E+00	1.600E+00	1.688E+00	9.688E-01	9.180E-02	1.987E-05	6.722E-16	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.370E+00	9.535E-01	4.620E-01	3.657E-02	2.607E-05	2.521E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	1.315E-02	1.315E-02	1.315E-02	1.315E-02	1.315E-02	1.315E-02	1.315E-02	1.315E-02
Th-232	Ra-228+D	1.000E+00	6.750E-02	1.935E-01	4.044E-01	8.451E-01	1.148E+00	1.178E+00	1.178E+00	1.177E+00
Th-232	Th-228+D	1.000E+00	1.063E-02	6.500E-02	2.580E-01	9.616E-01	1.572E+00	1.634E+00	1.634E+00	1.634E+00
Th-232	ΣDSR(j)		9.128E-02	2.717E-01	6.755E-01	1.820E+00	2.733E+00	2.825E+00	2.825E+00	2.825E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	1.833E+01	1.562E+01	1.481E+01	2.581E+01	2.723E+02	1.258E+06	*2.726E+14	*2.726E+14	
Th-228	1.825E+01	2.622E+01	5.411E+01	6.835E+02	9.590E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	2.739E+02	9.202E+01	3.701E+01	1.374E+01	9.146E+00	8.849E+00	8.850E+00	8.851E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.2001 ± 0.0004 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	2.444 ± 0.005	1.698E+00	1.472E+01	1.426E+00	1.753E+01
Th-228	1.000E+00	0.000E+00	1.370E+00	1.825E+01	1.274E+00	1.962E+01
Th-232	1.000E+00	109.2 ± 0.2	2.825E+00	8.849E+00	1.249E-01	2.002E+02

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.110E+00	9.842E-01	7.733E-01	3.326E-01	2.984E-02	6.457E-06	2.184E-16 0.000E+00
Ra-228	Th-232	1.000E+00		6.750E-02	1.935E-01	4.044E-01	8.451E-01	1.148E+00	1.178E+00	1.178E+00 1.177E+00
Ra-228	ΣDOSE(j)			1.178E+00	1.178E+00	1.178E+00	1.178E+00	1.178E+00	1.178E+00	1.178E+00 1.177E+00
Th-228	Ra-228	1.000E+00		2.538E-01	6.159E-01	9.144E-01	6.362E-01	6.196E-02	1.342E-05	4.538E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.370E+00	9.535E-01	4.620E-01	3.657E-02	2.607E-05	2.521E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.063E-02	6.500E-02	2.580E-01	9.616E-01	1.572E+00	1.634E+00	1.634E+00 1.634E+00
Th-228	ΣDOSE(j)			1.634E+00	1.634E+00	1.634E+00	1.634E+00	1.634E+00	1.634E+00	1.634E+00 1.634E+00
Th-232	Th-232	1.000E+00		1.315E-02	1.315E-02	1.315E-02	1.315E-02	1.315E-02	1.315E-02	1.315E-02 1.315E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01 9.997E-01
Ra-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01 9.997E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.30 seconds

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.150E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E-01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E-01	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	300.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.723E+00	5.724E+00	5.724E+00	5.724E+00	5.724E+00	5.724E+00	5.723E+00	5.722E+00
M(t):	2.289E-01	2.290E-01	2.290E-01	2.290E-01	2.290E-01	2.289E-01	2.289E-01	2.289E-01
Maximum TDOSE(t): 5.724E+00 mrem/yr at t = 0.2041 ± 0.0004 years								

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.041E-01 years														
Water Independent Pathways (Inhalation excludes radon)														
Radio- Nuclide Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.643E+00	0.2870	3.927E-04	0.0001	0.000E+00	0.0000	1.973E+00	0.3447	1.758E-03	0.0003	5.175E-03	0.0009	6.368E-03	0.0011
Th-228	1.709E+00	0.2986	1.369E-03	0.0002	0.000E+00	0.0000	1.248E-02	0.0022	2.809E-05	0.0000	4.951E-06	0.0000	2.683E-03	0.0005
Th-232	1.281E-01	0.0224	8.366E-03	0.0015	0.000E+00	0.0000	2.191E-01	0.0383	2.456E-04	0.0000	4.257E-04	0.0001	1.216E-02	0.0021
Total	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.606E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.041E-01 years														
Water Dependent Pathways														
Radio- Nuclide Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.630E+00	0.6341
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.726E+00	0.3015
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.684E-01	0.0644
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.724E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.551E+00	0.2710	2.961E-04	0.0001	0.000E+00	0.0000	2.020E+00	0.3530	1.798E-03	0.0003	5.303E-03	0.0009	6.319E-03	0.0011
Th-228	1.840E+00	0.3216	1.474E-03	0.0003	0.000E+00	0.0000	1.344E-02	0.0023	3.024E-05	0.0000	5.331E-06	0.0000	2.889E-03	0.0005
Th-232	8.880E-02	0.0155	8.357E-03	0.0015	0.000E+00	0.0000	1.707E-01	0.0298	2.044E-04	0.0000	3.011E-04	0.0001	1.200E-02	0.0021
Total	3.480E+00	0.6081	1.013E-02	0.0018	0.000E+00	0.0000	2.204E+00	0.3851	2.032E-03	0.0004	5.610E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.585E+00	0.6263
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.858E+00	0.3247
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.803E-01	0.0490
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.723E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.900E+00	0.3319	6.830E-04	0.0001	0.000E+00	0.0000	1.796E+00	0.3137	1.604E-03	0.0003	4.703E-03	0.0008	6.425E-03	0.0011
Th-228	1.281E+00	0.2238	1.026E-03	0.0002	0.000E+00	0.0000	9.354E-03	0.0016	2.105E-05	0.0000	3.711E-06	0.0000	2.011E-03	0.0004
Th-232	2.992E-01	0.0523	8.419E-03	0.0015	0.000E+00	0.0000	3.998E-01	0.0698	4.068E-04	0.0001	8.992E-04	0.0002	1.278E-02	0.0022
Total	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.606E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.709E+00	0.6480
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.293E+00	0.2260
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.215E-01	0.1261
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.724E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.071E+00	0.3619	9.999E-04	0.0002	0.000E+00	0.0000	1.415E+00	0.2472	1.270E-03	0.0002	3.697E-03	0.0006	5.956E-03	0.0010
Th-228	6.207E-01	0.1084	4.971E-04	0.0001	0.000E+00	0.0000	4.532E-03	0.0008	1.020E-05	0.0000	1.798E-06	0.0000	9.742E-04	0.0002
Th-232	7.883E-01	0.1377	8.631E-03	0.0015	0.000E+00	0.0000	7.851E-01	0.1372	7.518E-04	0.0001	1.907E-03	0.0003	1.428E-02	0.0025
Total	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.606E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.498E+00	0.6112
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.267E-01	0.1095
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.599E+00	0.2793
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.724E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.217E+00	0.2126	6.914E-04	0.0001	0.000E+00	0.0000	6.110E-01	0.1067	5.515E-04	0.0001	1.591E-03	0.0003	3.074E-03	0.0005
Th-228	4.914E-02	0.0086	3.935E-05	0.0000	0.000E+00	0.0000	3.588E-04	0.0001	8.074E-07	0.0000	1.423E-07	0.0000	7.712E-05	0.0000
Th-232	2.214E+00	0.3868	9.397E-03	0.0016	0.000E+00	0.0000	1.593E+00	0.2784	1.480E-03	0.0003	4.015E-03	0.0007	1.806E-02	0.0032
Total	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.606E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.834E+00	0.3204
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.961E-02	0.0087
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.840E+00	0.6709
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.724E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.158E-01	0.0202	6.729E-05	0.0000	0.000E+00	0.0000	5.487E-02	0.0096	4.959E-05	0.0000	1.428E-04	0.0000	2.861E-04	0.0000
Th-228	3.502E-05	0.0000	2.805E-08	0.0000	0.000E+00	0.0000	2.557E-07	0.0000	5.755E-10	0.0000	1.014E-10	0.0000	5.497E-08	0.0000
Th-232	3.364E+00	0.5878	1.006E-02	0.0018	0.000E+00	0.0000	2.150E+00	0.3756	1.982E-03	0.0003	5.463E-03	0.0010	2.093E-02	0.0037
Total	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.606E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.712E-01	0.0299
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.536E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.553E+00	0.9701
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.724E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.506E-05	0.0000	1.457E-08	0.0000	0.000E+00	0.0000	1.187E-05	0.0000	1.073E-08	0.0000	3.089E-08	0.0000	6.193E-08	0.0000
Th-228	3.386E-16	0.0000	2.712E-19	0.0000	0.000E+00	0.0000	2.472E-18	0.0000	5.564E-21	0.0000	9.809E-22	0.0000	5.315E-19	0.0000
Th-232	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.605E-03	0.0010	2.121E-02	0.0037
Total	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.605E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.705E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.419E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.724E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.724E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	8.477E-16	0.0000	4.928E-19	0.0000	0.000E+00	0.0000	4.016E-16	0.0000	3.630E-19	0.0000	1.045E-18	0.0000	2.095E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.605E-03	0.0010	2.121E-02	0.0037
Total	3.480E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.205E+00	0.3852	2.032E-03	0.0004	5.605E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.723E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.723E+00	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.479E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.204E+00	0.3852	2.031E-03	0.0004	5.604E-03	0.0010	2.121E-02	0.0037
Total	3.479E+00	0.6080	1.013E-02	0.0018	0.000E+00	0.0000	2.204E+00	0.3852	2.031E-03	0.0004	5.604E-03	0.0010	2.121E-02	0.0037

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.722E+00	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.722E+00	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	3.230E+00	2.863E+00	2.250E+00	9.676E-01	8.682E-02	1.879E-05	6.355E-16	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	3.546E-01	8.455E-01	1.248E+00	8.664E-01	8.436E-02	1.827E-05	6.178E-16	0.000E+00
Ra-228+D	ΣDSR(j)		3.585E+00	3.709E+00	3.498E+00	1.834E+00	1.712E-01	3.705E-05	1.253E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	1.858E+00	1.293E+00	6.267E-01	4.961E-02	3.536E-05	3.419E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	7.432E-02	7.432E-02	7.432E-02	7.432E-02	7.432E-02	7.431E-02	7.431E-02	7.430E-02
Th-232	Ra-228+D	1.000E+00	1.910E-01	5.571E-01	1.171E+00	2.453E+00	3.334E+00	3.420E+00	3.420E+00	3.420E+00
Th-232	Th-228+D	1.000E+00	1.507E-02	9.011E-02	3.540E-01	1.313E+00	2.145E+00	2.229E+00	2.229E+00	2.229E+00
Th-232	ΣDSR(j)		2.803E-01	7.215E-01	1.599E+00	3.840E+00	5.553E+00	5.724E+00	5.723E+00	5.722E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	6.974E+00	6.741E+00	7.146E+00	1.363E+01	1.460E+02	6.747E+05	*2.726E+14	*2.726E+14	
Th-228	1.345E+01	1.933E+01	3.989E+01	5.039E+02	7.069E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	8.918E+01	3.465E+01	1.564E+01	6.510E+00	4.502E+00	4.368E+00	4.368E+00	4.369E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.2041 ± 0.0004 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	1.129 ± 0.002	3.710E+00	6.738E+00	3.630E+00	6.888E+00
Th-228	1.000E+00	0.000E+00	1.858E+00	1.345E+01	1.726E+00	1.449E+01
Th-232	1.000E+00	110.0 ± 0.2	5.724E+00	4.368E+00	3.684E-01	6.785E+01

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		3.230E+00	2.863E+00	2.250E+00	9.676E-01	8.682E-02	1.879E-05	6.355E-16 0.000E+00
Ra-228	Th-232	1.000E+00		1.910E-01	5.571E-01	1.171E+00	2.453E+00	3.334E+00	3.420E+00	3.420E+00 3.420E+00
Ra-228	ΣDOSE(j)			3.421E+00	3.421E+00	3.421E+00	3.420E+00	3.420E+00	3.420E+00	3.420E+00 3.420E+00
Th-228	Ra-228	1.000E+00		3.546E-01	8.455E-01	1.248E+00	8.664E-01	8.436E-02	1.827E-05	6.178E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.858E+00	1.293E+00	6.267E-01	4.961E-02	3.536E-05	3.419E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		1.507E-02	9.011E-02	3.540E-01	1.313E+00	2.145E+00	2.229E+00	2.229E+00 2.229E+00
Th-228	ΣDOSE(j)			2.228E+00	2.229E+00	2.229E+00	2.229E+00	2.229E+00	2.229E+00	2.229E+00 2.229E+00
Th-232	Th-232	1.000E+00		7.432E-02	7.432E-02	7.432E-02	7.432E-02	7.432E-02	7.431E-02	7.431E-02 7.430E-02

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00		1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16 0.000E+00
Ra-228	Th-232	1.000E+00		0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01 9.997E-01
Ra-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01
Th-228	Ra-228	1.000E+00		0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16 0.000E+00
Th-228	Th-228	1.000E+00		1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00 0.000E+00
Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01 9.997E-01
Th-228	ΣS(j):			1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.997E-01
Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01 9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.31 seconds

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Time = 3.000E+00	11
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: Hematite Rev 1 Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(2)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(3)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(4)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(5)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(6)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(8)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(9)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(10)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(11)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(1)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(2)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(1)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(2)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(3)
D-34	Food transfer factors:			
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	7.400E-02	4.000E-02	RTF(1,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,3)
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(2,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(2,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(2,3)
D-34	Th-232 , plant/soil concentration ratio, dimensionless	9.930E-04	1.000E-03	RTF(3,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.900E-05	1.000E-04	RTF(3,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.900E-06	5.000E-06	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ra-228+D , fish	4.930E+01	5.000E+01	BIOFAC(1,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(1,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	6.700E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	2.910E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-228	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Th-228	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(3)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(3)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.690E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	6.000E-04	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.500E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.700E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	9.900E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.300E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.500E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.010E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.400E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	9.989E+05	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.800E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.520E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.100E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.500E+00	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	3.338E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.400E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.690E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.500E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.900E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.700E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	9.900E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.456E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	9.100E+03	7.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+02	7.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.810E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	6.750E+04	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.440E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.300E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.200E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : Hematite - Uniform Th-232+C CSM - AF 3,000 m²

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\HEMATITE - UNIFORM TH-232+C CSM.RAD

June 21, 2011

Appendix N

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.100E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.820E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.600E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.150E+00	FMEAT
R018	Contamination fraction of milk	-1	-1	0.150E+00	FMILK
R019	Livestock fodder intake for meat (kg/day)	1.200E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	9.000E+00	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	3.700E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.050E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	4.500E-01	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	2.300E-05	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.600E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.700E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	2.100E-01	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	128	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	3000.00 square meters	Ra-228	1.000E+00
Thickness:	6.70 meters	Th-228	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.124E+01	1.124E+01	1.124E+01	1.124E+01	1.124E+01	1.124E+01	1.124E+01	1.124E+01
M(t):	4.497E-01	4.498E-01	4.498E-01	4.498E-01	4.498E-01	4.498E-01	4.498E-01	4.497E-01
Maximum TDOSE(t): 1.124E+01 mrem/yr at t = 0.2101 ± 0.0004 years								

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.101E-01 years														
Water Independent Pathways (Inhalation excludes radon)														
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Ra-228	1.764E+00	0.1569	5.077E-04	0.0000	0.000E+00	0.0000	6.572E+00	0.5845	1.757E-02	0.0016	5.171E-02	0.0046	2.123E-02	0.0019
Th-228	1.833E+00	0.1630	1.754E-03	0.0002	0.000E+00	0.0000	4.151E-02	0.0037	2.803E-04	0.0000	4.940E-05	0.0000	8.923E-03	0.0008
Th-232	1.386E-01	0.0123	1.074E-02	0.0010	0.000E+00	0.0000	7.352E-01	0.0654	2.469E-03	0.0002	4.295E-03	0.0004	4.055E-02	0.0036
Total	3.736E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.349E+00	0.6536	2.032E-02	0.0018	5.606E-02	0.0050	7.071E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 2.101E-01 years														
Water Dependent Pathways														
Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide														
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.428E+00	0.7495
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.885E+00	0.1676
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.319E-01	0.0829
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.663E+00	0.1479	3.802E-04	0.0000	0.000E+00	0.0000	6.734E+00	0.5989	1.798E-02	0.0016	5.303E-02	0.0047	2.106E-02	0.0019
Th-228	1.978E+00	0.1759	1.893E-03	0.0002	0.000E+00	0.0000	4.479E-02	0.0040	3.024E-04	0.0000	5.331E-05	0.0000	9.629E-03	0.0009
Th-232	9.519E-02	0.0085	1.073E-02	0.0010	0.000E+00	0.0000	5.689E-01	0.0506	2.044E-03	0.0002	3.011E-03	0.0003	4.002E-02	0.0036
Total	3.736E+00	0.3323	1.300E-02	0.0012	0.000E+00	0.0000	7.348E+00	0.6535	2.032E-02	0.0018	5.610E-02	0.0050	7.071E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.489E+00	0.7550
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.034E+00	0.1809
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.199E-01	0.0640
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.038E+00	0.1813	8.770E-04	0.0001	0.000E+00	0.0000	5.985E+00	0.5323	1.604E-02	0.0014	4.703E-02	0.0042	2.142E-02	0.0019
Th-228	1.377E+00	0.1224	1.317E-03	0.0001	0.000E+00	0.0000	3.118E-02	0.0028	2.105E-04	0.0000	3.711E-05	0.0000	6.702E-03	0.0006
Th-232	3.209E-01	0.0285	1.081E-02	0.0010	0.000E+00	0.0000	1.333E+00	0.1185	4.068E-03	0.0004	8.992E-03	0.0008	4.259E-02	0.0038
Total	3.736E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.349E+00	0.6535	2.032E-02	0.0018	5.606E-02	0.0050	7.071E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.109E+00	0.7211
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.416E+00	0.1259
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.720E+00	0.1530
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.223E+00	0.1977	1.284E-03	0.0001	0.000E+00	0.0000	4.717E+00	0.4195	1.270E-02	0.0011	3.697E-02	0.0033	1.985E-02	0.0018
Th-228	6.669E-01	0.0593	6.383E-04	0.0001	0.000E+00	0.0000	1.511E-02	0.0013	1.020E-04	0.0000	1.798E-05	0.0000	3.247E-03	0.0003
Th-232	8.457E-01	0.0752	1.108E-02	0.0010	0.000E+00	0.0000	2.617E+00	0.2327	7.518E-03	0.0007	1.907E-02	0.0017	4.760E-02	0.0042
Total	3.736E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.349E+00	0.6535	2.032E-02	0.0018	5.606E-02	0.0050	7.071E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.011E+00	0.6235
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.860E-01	0.0610
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.548E+00	0.3155
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.307E+00	0.1162	8.878E-04	0.0001	0.000E+00	0.0000	2.037E+00	0.1811	5.515E-03	0.0005	1.591E-02	0.0014	1.025E-02	0.0009
Th-228	5.280E-02	0.0047	5.053E-05	0.0000	0.000E+00	0.0000	1.196E-03	0.0001	8.074E-06	0.0000	1.423E-06	0.0000	2.571E-04	0.0000
Th-232	2.376E+00	0.2113	1.207E-02	0.0011	0.000E+00	0.0000	5.311E+00	0.4723	1.480E-02	0.0013	4.015E-02	0.0036	6.020E-02	0.0054
Total	3.736E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.349E+00	0.6535	2.032E-02	0.0018	5.606E-02	0.0050	7.071E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.376E+00	0.3002
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.431E-02	0.0048
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.815E+00	0.6950
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	1.243E-01	0.0111	8.640E-05	0.0000	0.000E+00	0.0000	1.829E-01	0.0163	4.959E-04	0.0000	1.428E-03	0.0001	9.537E-04	0.0001
Th-228	3.763E-05	0.0000	3.602E-08	0.0000	0.000E+00	0.0000	8.524E-07	0.0000	5.755E-09	0.0000	1.014E-09	0.0000	1.832E-07	0.0000
Th-232	3.611E+00	0.3212	1.292E-02	0.0011	0.000E+00	0.0000	7.166E+00	0.6373	1.982E-02	0.0018	5.463E-02	0.0049	6.975E-02	0.0062
Total	3.736E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.349E+00	0.6536	2.032E-02	0.0018	5.606E-02	0.0050	7.071E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.102E-01	0.0276
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.871E-05	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.093E+01	0.9724
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	2.691E-05	0.0000	1.871E-08	0.0000	0.000E+00	0.0000	3.958E-05	0.0000	1.073E-07	0.0000	3.089E-07	0.0000	2.064E-07	0.0000
Th-228	3.639E-16	0.0000	3.482E-19	0.0000	0.000E+00	0.0000	8.242E-18	0.0000	5.564E-20	0.0000	9.809E-21	0.0000	1.772E-18	0.0000
Th-232	3.736E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.349E+00	0.6535	2.032E-02	0.0018	5.605E-02	0.0050	7.070E-02	0.0063
Total	3.736E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.349E+00	0.6536	2.032E-02	0.0018	5.605E-02	0.0050	7.070E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.713E-05	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.743E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	9.101E-16	0.0000	6.328E-19	0.0000	0.000E+00	0.0000	1.339E-15	0.0000	3.630E-18	0.0000	1.045E-17	0.0000	6.982E-18	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.735E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.348E+00	0.6536	2.032E-02	0.0018	5.605E-02	0.0050	7.070E-02	0.0063
Total	3.735E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.348E+00	0.6536	2.032E-02	0.0018	5.605E-02	0.0050	7.070E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.270E-15	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	3.735E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.347E+00	0.6536	2.031E-02	0.0018	5.604E-02	0.0050	7.069E-02	0.0063
Total	3.735E+00	0.3322	1.300E-02	0.0012	0.000E+00	0.0000	7.347E+00	0.6536	2.031E-02	0.0018	5.604E-02	0.0050	7.069E-02	0.0063

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.124E+01	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
 Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228+D	Ra-228+D	1.000E+00	8.074E+00	7.157E+00	5.624E+00	2.419E+00	2.170E-01	4.696E-05	1.588E-15	0.000E+00
Ra-228+D	Th-228+D	1.000E+00	4.150E-01	9.517E-01	1.387E+00	9.573E-01	9.314E-02	2.017E-05	6.821E-16	0.000E+00
Ra-228+D	ΣDSR(j)		8.489E+00	8.109E+00	7.011E+00	3.376E+00	3.102E-01	6.713E-05	2.270E-15	0.000E+00
Th-228+D	Th-228+D	1.000E+00	2.034E+00	1.416E+00	6.860E-01	5.431E-02	3.871E-05	3.743E-16	0.000E+00	0.000E+00
Th-232	Th-232	1.000E+00	2.313E-01	2.313E-01	2.313E-01	2.313E-01	2.313E-01	2.313E-01	2.313E-01	2.313E-01
Th-232	Ra-228+D	1.000E+00	4.704E-01	1.385E+00	2.918E+00	6.124E+00	8.325E+00	8.542E+00	8.541E+00	8.540E+00
Th-232	Th-228+D	1.000E+00	1.818E-02	1.037E-01	3.982E-01	1.460E+00	2.378E+00	2.471E+00	2.471E+00	2.471E+00
Th-232	ΣDSR(j)		7.199E-01	1.720E+00	3.548E+00	7.815E+00	1.093E+01	1.124E+01	1.124E+01	1.124E+01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-228	2.945E+00	3.083E+00	3.566E+00	7.406E+00	8.061E+01	3.724E+05	*2.726E+14	*2.726E+14	
Th-228	1.229E+01	1.766E+01	3.644E+01	4.603E+02	6.458E+05	*8.195E+14	*8.195E+14	*8.195E+14	
Th-232	3.473E+01	1.454E+01	7.047E+00	3.199E+00	2.286E+00	2.223E+00	2.223E+00	2.224E+00	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
 and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
 at tmin = time of minimum single radionuclide soil guideline
 and at tmax = time of maximum total dose = 0.2101 ± 0.0004 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Ra-228	1.000E+00	0.000E+00	8.489E+00	2.945E+00	8.428E+00	2.966E+00
Th-228	1.000E+00	0.000E+00	2.034E+00	1.229E+01	1.885E+00	1.326E+01
Th-232	1.000E+00	108.6 ± 0.2	1.124E+01	2.223E+00	9.319E-01	2.683E+01

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	8.074E+00	7.157E+00	5.624E+00	2.419E+00	2.170E-01	4.696E-05	1.588E-15	0.000E+00
Ra-228	Th-232	1.000E+00	4.704E-01	1.385E+00	2.918E+00	6.124E+00	8.325E+00	8.542E+00	8.541E+00	8.540E+00
Ra-228	ΣDOSE(j)		8.545E+00	8.542E+00	8.542E+00	8.542E+00	8.542E+00	8.542E+00	8.541E+00	8.540E+00
Th-228	Ra-228	1.000E+00	4.150E-01	9.517E-01	1.387E+00	9.573E-01	9.314E-02	2.017E-05	6.821E-16	0.000E+00
Th-228	Th-228	1.000E+00	2.034E+00	1.416E+00	6.860E-01	5.431E-02	3.871E-05	3.743E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	1.818E-02	1.037E-01	3.982E-01	1.460E+00	2.378E+00	2.471E+00	2.471E+00	2.471E+00
Th-228	ΣDOSE(j)		2.467E+00	2.471E+00	2.471E+00	2.471E+00	2.471E+00	2.471E+00	2.471E+00	2.471E+00
Th-232	Th-232	1.000E+00	2.313E-01	2.313E-01	2.313E-01	2.313E-01	2.313E-01	2.313E-01	2.313E-01	2.313E-01

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
 Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
Ra-228	Ra-228	1.000E+00	1.000E+00	8.864E-01	6.965E-01	2.995E-01	2.688E-02	5.816E-06	1.967E-16	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E-01	3.035E-01	7.004E-01	9.731E-01	1.000E+00	9.999E-01	9.997E-01
Ra-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E-01	5.384E-01	4.089E-01	4.025E-02	8.716E-06	2.948E-16	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+00	6.961E-01	3.372E-01	2.670E-02	1.903E-05	1.840E-16	0.000E+00	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-02	1.243E-01	5.644E-01	9.597E-01	1.000E+00	9.999E-01	9.997E-01
Th-228	ΣS(j):		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01
Th-232	Th-232	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01

THF(i) is the thread fraction of the parent nuclide.

RESRAD.EXE execution time = 1.37 seconds