

Appendix H37 –  
RESRAD – 7.0 Output for Area 3.1 Am

# Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

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Summary : RESRAD Default Parameters  
File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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Dose Conversion Factor (and Related) Parameter Summary  
 Dose Library: FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1( 1)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1( 2)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1( 3)
A-1	Ba-137m (Source: FGR 12)	3.606E+00	3.606E+00	DCF1( 4)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1( 5)
A-1	Cs-137 (Source: FGR 12)	7.510E-04	7.510E-04	DCF1( 6)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1( 7)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1( 8)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1( 9)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1( 10)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1( 11)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1( 12)
A-1	Sr-90 (Source: FGR 12)	7.043E-04	7.043E-04	DCF1( 13)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1( 14)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1( 15)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1( 16)
A-1	Y-90 (Source: FGR 12)	2.391E-02	2.391E-02	DCF1( 17)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Am-241	4.440E-01	4.440E-01	DCF2( 1)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2( 2)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2( 3)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2( 4)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2( 5)
B-1	U-233	1.350E-01	1.350E-01	DCF2( 6)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Am-241	3.640E-03	3.640E-03	DCF3( 1)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3( 2)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3( 3)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3( 4)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3( 5)
D-1	U-233	2.890E-04	2.890E-04	DCF3( 6)
D-34	Food transfer factors:			
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF( 1,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF( 1,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF( 1,3)
D-34				
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF( 2,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF( 2,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF( 2,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF( 3,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF( 3,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF( 3,3)
D-34				

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Dose Conversion Factor (and Related) Parameter Summary (continued)  
 Dose Library: FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF( 4,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF( 4,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF( 4,3)
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF( 5,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF( 5,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF( 5,3)
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF( 6,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF( 6,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF( 6,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC( 1,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC( 1,2)
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC( 2,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC( 2,2)
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC( 3,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC( 3,2)
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC( 4,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC( 4,2)
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC( 5,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC( 5,2)
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC( 6,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC( 6,2)

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

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Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	6.450E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.000E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRAC
R011	Length parallel to aquifer flow (m)	1.650E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T( 2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T( 3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T( 4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T( 5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T( 6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T( 7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T( 8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T( 9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.091E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Cs-137	1.016E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Sr-90	5.620E-01	0.000E+00	---	S1(4)
R012	Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1( 1)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1( 2)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1( 4)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.700E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	3.600E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.400E+02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.400E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.600E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	7.800E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.160E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	4.700E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	4.100E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.370E+07	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.700E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.600E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.500E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.400E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	3.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	5.000E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	5.720E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.700E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	3.600E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.500E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	1.400E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.400E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	1.900E+03	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.862E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	2.800E+02	4.600E+03	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	2.800E+02	4.600E+03	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	2.800E+02	4.600E+03	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.333E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	5.000E+00	3.000E+01	---	DCNUCC(4)
R016	Unsat. zone 1 (cm**3/g)	5.000E+00	3.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	5.000E+00	3.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.919E-02	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	2.300E+00	-1.000E+00	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	2.300E+00	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	2.300E+00	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.179E-02	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	5.890E+03	6.000E+04	---	DCNUCC(5)
R016	Unsat. zone 1 (cm**3/g)	5.890E+03	6.000E+04	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	5.890E+03	6.000E+04	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.536E-05	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCC( 6)
R016	Unsaturated zone 1 (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCC( 6,1)
R016	Saturated zone (cm**3/g)	3.500E+01	5.000E+01	---	DCNUCC( 6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.254E-03	ALEACH( 6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK( 6)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.480E-05	1.000E-04	---	MLINH
R017	Exposure duration	1.000E+00	3.000E+01	---	ED
R017	Shielding factor, inhalation	1.000E+00	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.730E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.600E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE( 1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE( 2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE( 3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE( 4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE( 5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE( 6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE( 7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE( 8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE( 9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA( 1)
R017	Ring 2	not used	2.732E-01	---	FRACA( 2)
R017	Ring 3	not used	0.000E+00	---	FRACA( 3)
R017	Ring 4	not used	0.000E+00	---	FRACA( 4)
R017	Ring 5	not used	0.000E+00	---	FRACA( 5)
R017	Ring 6	not used	0.000E+00	---	FRACA( 6)
R017	Ring 7	not used	0.000E+00	---	FRACA( 7)
R017	Ring 8	not used	0.000E+00	---	FRACA( 8)
R017	Ring 9	not used	0.000E+00	---	FRACA( 9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.500E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	9.000E+00	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	0.000E+00	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.830E+01	3.650E+01	---	SOIL

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	7.300E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.730E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.420E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGHWH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	6.700E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	1.800E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5



### Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0      T<sub>1/2</sub> Limit = 180 days      07/22/2016 11:16 Page 8  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

#### Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIT
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

#### Summary of Pathway Selections

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

### Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0      T½ Limit = 180 days      07/22/2016 11:16 Page 9  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g	
Area: 64500.00 square meters	Am-241	1.091E+00
Thickness: 1.00 meters	Cs-137	1.016E+00
Cover Depth: 0.00 meters	Sr-90	5.620E-01

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.267E+00	6.984E+00	6.455E+00	4.952E+00	2.568E+00	8.876E-01	3.869E-01	1.186E-01
M(t):	2.907E-01	2.794E-01	2.582E-01	1.981E-01	1.027E-01	3.550E-02	1.548E-02	4.745E-03
Maximum TDOSE(t):	7.267E+00 mrem/yr at t = 0.000E+00 years							

### Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0 T½ Limit = 180 days 07/22/2016 11:16 Page 10.  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD,

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

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.031E-02	0.0028	1.070E-02	0.0015	0.000E+00	0.0000	5.304E-01	0.0730	6.808E-03	0.0009	1.046E-03	0.0001	6.608E-02	0.0091
Cs-137	1.422E+00	0.1956	7.081E-07	0.0000	0.000E+00	0.0000	2.671E-01	0.0368	1.559E-01	0.0215	2.873E-01	0.0395	8.361E-04	0.0001
Sr-90	5.613E-03	0.0008	1.583E-05	0.0000	0.000E+00	0.0000	3.339E+00	0.4596	3.795E-01	0.0522	7.725E-01	0.1063	1.393E-03	0.0002
<b>Total</b>	<b>1.448E+00</b>	<b>0.1992</b>	<b>1.072E-02</b>	<b>0.0015</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>4.137E+00</b>	<b>0.5693</b>	<b>5.423E-01</b>	<b>0.0746</b>	<b>1.061E+00</b>	<b>0.1460</b>	<b>6.831E-02</b>	<b>0.0094</b>

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

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.354E-01	0.0874
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.133E+00	0.2935
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.498E+00	0.6190
<b>Total</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>7.267E+00</b>	<b>1.0000</b>

\*Sum of all water independent and dependent pathways.

Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0 T½ Limit = 180 days 07/22/2016 11:16 Page 11  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.028E-02	0.0029	1.068E-02	0.0015	0.000E+00	0.0000	5.296E-01	0.0758	6.797E-03	0.0010	1.044E-03	0.0001	6.597E-02	0.0094
Cs-137	1.389E+00	0.1988	6.917E-07	0.0000	0.000E+00	0.0000	2.609E-01	0.0374	1.523E-01	0.0218	2.806E-01	0.0402	8.167E-04	0.0001
Sr-90	5.321E-03	0.0008	1.501E-05	0.0000	0.000E+00	0.0000	3.167E+00	0.4534	3.601E-01	0.0516	7.328E-01	0.1049	1.320E-03	0.0002
<b>Total</b>	<b>1.414E+00</b>	<b>0.2025</b>	<b>1.070E-02</b>	<b>0.0015</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>3.957E+00</b>	<b>0.5666</b>	<b>5.192E-01</b>	<b>0.0743</b>	<b>1.014E+00</b>	<b>0.1453</b>	<b>6.810E-02</b>	<b>0.0098</b>

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

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.343E-01	0.0908
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.083E+00	0.2983
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.266E+00	0.6109
<b>Total</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>6.984E+00</b>	<b>1.0000</b>

\*Sum of all water independent and dependent pathways.

### Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0      T½ Limit = 180 days      07/22/2016 11:16 Page 12  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.021E-02	0.0031	1.065E-02	0.0016	0.000E+00	0.0000	5.278E-01	0.0818	6.774E-03	0.0010	1.041E-03	0.0002	6.574E-02	0.0102
Cs-137	1.325E+00	0.2052	6.599E-07	0.0000	0.000E+00	0.0000	2.490E-01	0.0386	1.453E-01	0.0225	2.677E-01	0.0415	7.792E-04	0.0001
Sr-90	4.784E-03	0.0007	1.349E-05	0.0000	0.000E+00	0.0000	2.847E+00	0.4410	3.237E-01	0.0502	6.587E-01	0.1021	1.187E-03	0.0002
<b>Total</b>	<b>1.350E+00</b>	<b>0.2091</b>	<b>1.066E-02</b>	<b>0.0017</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>3.623E+00</b>	<b>0.5613</b>	<b>4.758E-01</b>	<b>0.0737</b>	<b>9.275E-01</b>	<b>0.1437</b>	<b>6.771E-02</b>	<b>0.0105</b>

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

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.322E-01	0.0979
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.988E+00	0.3079
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.835E+00	0.5941
<b>Total</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>6.455E+00</b>	<b>1.0000</b>

\*Sum of all water independent and dependent pathways.

Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0 T½ Limit = 180 days 07/22/2016 11:16 Page 13  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.998E-02	0.0040	1.052E-02	0.0021	0.000E+00	0.0000	5.216E-01	0.1053	6.696E-03	0.0014	1.029E-03	0.0002	6.498E-02	0.0131
Cs-137	1.124E+00	0.2269	5.598E-07	0.0000	0.000E+00	0.0000	2.112E-01	0.0426	1.233E-01	0.0249	2.271E-01	0.0459	6.609E-04	0.0001
Sr-90	3.295E-03	0.0007	9.293E-06	0.0000	0.000E+00	0.0000	1.961E+00	0.3959	2.230E-01	0.0450	4.537E-01	0.0916	8.175E-04	0.0002
<b>Total</b>	<b>1.147E+00</b>	<b>0.2316</b>	<b>1.053E-02</b>	<b>0.0021</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>2.693E+00</b>	<b>0.5439</b>	<b>3.529E-01</b>	<b>0.0713</b>	<b>6.818E-01</b>	<b>0.1377</b>	<b>6.645E-02</b>	<b>0.0134</b>

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

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.248E-01	0.1262
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.686E+00	0.3405
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.641E+00	0.5334
<b>Total</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>4.952E+00</b>	<b>1.0000</b>

\*Sum of all water independent and dependent pathways.

Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0 T½ Limit = 180 days 07/22/2016 11:16 Page 14  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.932E-02	0.0075	1.017E-02	0.0040	0.000E+00	0.0000	5.044E-01	0.1964	6.475E-03	0.0025	9.946E-04	0.0004	6.283E-02	0.0245
Cs-137	7.023E-01	0.2734	3.498E-07	0.0000	0.000E+00	0.0000	1.320E-01	0.0514	7.703E-02	0.0300	1.419E-01	0.0553	4.130E-04	0.0002
Sr-90	1.135E-03	0.0004	3.202E-06	0.0000	0.000E+00	0.0000	6.757E-01	0.2631	7.683E-02	0.0299	1.563E-01	0.0609	2.817E-04	0.0001
<b>Total</b>	<b>7.227E-01</b>	<b>0.2814</b>	<b>1.018E-02</b>	<b>0.0040</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>1.312E+00</b>	<b>0.5108</b>	<b>1.603E-01</b>	<b>0.0624</b>	<b>2.992E-01</b>	<b>0.1165</b>	<b>6.352E-02</b>	<b>0.0247</b>

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

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.220E-04	0.0001	1.930E-06	0.0000	0.000E+00	0.0000	8.582E-05	0.0000	3.322E-06	0.0000	1.568E-07	0.0000	6.045E-01	0.2354
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.054E+00	0.4102
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.103E-01	0.3544
<b>Total</b>	<b>2.220E-04</b>	<b>0.0001</b>	<b>1.930E-06</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>8.582E-05</b>	<b>0.0000</b>	<b>3.322E-06</b>	<b>0.0000</b>	<b>1.568E-07</b>	<b>0.0000</b>	<b>2.568E+00</b>	<b>1.0000</b>

\*Sum of all water independent and dependent pathways.

Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0 T½ Limit = 180 days 07/22/2016 11:16 Page 15  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.717E-02	0.0193	9.043E-03	0.0102	0.000E+00	0.0000	4.484E-01	0.5051	5.756E-03	0.0065	8.841E-04	0.0010	5.585E-02	0.0629
Cs-137	1.354E-01	0.1526	6.746E-08	0.0000	0.000E+00	0.0000	2.545E-02	0.0287	1.486E-02	0.0167	2.737E-02	0.0308	7.966E-05	0.0001
Sr-90	2.728E-05	0.0000	7.693E-08	0.0000	0.000E+00	0.0000	1.623E-02	0.0183	1.846E-03	0.0021	3.756E-03	0.0042	6.768E-06	0.0000
<b>Total</b>	<b>1.526E-01</b>	<b>0.1720</b>	<b>9.043E-03</b>	<b>0.0102</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>4.900E-01</b>	<b>0.5521</b>	<b>2.246E-02</b>	<b>0.0253</b>	<b>3.201E-02</b>	<b>0.0361</b>	<b>5.593E-02</b>	<b>0.0630</b>

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

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.381E-03	0.0016	1.205E-05	0.0000	0.000E+00	0.0000	5.346E-04	0.0006	2.135E-05	0.0000	9.936E-07	0.0000	5.390E-01	0.6073
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.032E-01	0.2289
Sr-90	6.740E-02	0.0759	1.177E-03	0.0013	0.000E+00	0.0000	2.697E-02	0.0304	8.420E-03	0.0095	1.954E-02	0.0220	1.454E-01	0.1638
<b>Total</b>	<b>6.878E-02</b>	<b>0.0775</b>	<b>1.189E-03</b>	<b>0.0013</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>2.750E-02</b>	<b>0.0310</b>	<b>8.442E-03</b>	<b>0.0095</b>	<b>1.954E-02</b>	<b>0.0220</b>	<b>8.876E-01</b>	<b>1.0000</b>

\*Sum of all water independent and dependent pathways.



Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0 T½ Limit = 180 days 07/22/2016 11:16 Page 16  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.226E-02	0.0317	6.459E-03	0.0167	0.000E+00	0.0000	3.203E-01	0.8278	4.111E-03	0.0106	6.315E-04	0.0016	3.989E-02	0.1031
Cs-137	1.229E-03	0.0032	6.123E-10	0.0000	0.000E+00	0.0000	2.310E-04	0.0006	1.348E-04	0.0003	2.484E-04	0.0006	7.230E-07	0.0000
Sr-90	6.442E-10	0.0000	1.817E-12	0.0000	0.000E+00	0.0000	3.833E-07	0.0000	4.359E-08	0.0000	8.870E-08	0.0000	1.598E-10	0.0000
<b>Total</b>	<b>1.349E-02</b>	<b>0.0349</b>	<b>6.459E-03</b>	<b>0.0167</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>3.205E-01</b>	<b>0.8284</b>	<b>4.246E-03</b>	<b>0.0110</b>	<b>8.800E-04</b>	<b>0.0023</b>	<b>3.989E-02</b>	<b>0.1031</b>

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

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	1.015E-03	0.0026	8.856E-06	0.0000	0.000E+00	0.0000	3.930E-04	0.0010	1.570E-05	0.0000	7.309E-07	0.0000	3.850E-01	0.9952
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.844E-03	0.0048
Sr-90	1.592E-06	0.0000	2.780E-08	0.0000	0.000E+00	0.0000	6.370E-07	0.0000	1.989E-07	0.0000	4.616E-07	0.0000	3.433E-06	0.0000
<b>Total</b>	<b>1.016E-03</b>	<b>0.0026</b>	<b>8.884E-06</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>3.936E-04</b>	<b>0.0010</b>	<b>1.590E-05</b>	<b>0.0000</b>	<b>1.192E-06</b>	<b>0.0000</b>	<b>3.869E-01</b>	<b>1.0000</b>

\*Sum of all water independent and dependent pathways.

Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0 T½ Limit = 180 days 07/22/2016 11:16 Page 17  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.777E-03	0.0318	1.989E-03	0.0168	0.000E+00	0.0000	9.864E-02	0.8316	1.266E-03	0.0107	1.945E-04	0.0016	1.229E-02	0.1036
Cs-137	8.759E-11	0.0000	4.362E-17	0.0000	0.000E+00	0.0000	1.646E-11	0.0000	9.607E-12	0.0000	1.770E-11	0.0000	5.151E-14	0.0000
Sr-90	4.124E-26	0.0000	1.163E-28	0.0000	0.000E+00	0.0000	2.454E-23	0.0000	2.791E-24	0.0000	5.679E-24	0.0000	1.023E-26	0.0000
<b>Total</b>	<b>3.777E-03</b>	<b>0.0318</b>	<b>1.989E-03</b>	<b>0.0168</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>9.864E-02</b>	<b>0.8316</b>	<b>1.266E-03</b>	<b>0.0107</b>	<b>1.945E-04</b>	<b>0.0016</b>	<b>1.229E-02</b>	<b>0.1036</b>

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

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.295E-04	0.0028	2.875E-06	0.0000	0.000E+00	0.0000	1.276E-04	0.0011	5.096E-06	0.0000	2.377E-07	0.0000	1.186E-01	1.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.314E-10	0.0000
Sr-90	1.019E-22	0.0000	1.779E-24	0.0000	0.000E+00	0.0000	4.078E-23	0.0000	1.273E-23	0.0000	2.955E-23	0.0000	2.198E-22	0.0000
<b>Total</b>	<b>3.295E-04</b>	<b>0.0028</b>	<b>2.875E-06</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>1.276E-04</b>	<b>0.0011</b>	<b>5.096E-06</b>	<b>0.0000</b>	<b>2.377E-07</b>	<b>0.0000</b>	<b>1.186E-01</b>	<b>1.0000</b>

\*Sum of all water independent and dependent pathways.

### Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0      T½ Limit = 180 days      07/22/2016 11:16 Page 18  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

Dose/Source Ratios Summed Over All Pathways											
0	Parent (i)	Product (j)	Parent and Thread Fraction	Progeny Principal Radionuclide Contributions Indicated							
				DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	Am-241		1.000E+00	5.824E-01	5.814E-01	5.795E-01	5.727E-01	5.537E-01	4.922E-01	3.516E-01	1.083E-01
Am-241	Np-237+D		1.000E+00	1.900E-06	5.738E-06	1.275E-05	3.129E-05	3.415E-04	1.844E-03	1.355E-03	4.391E-04
Am-241	U-233		1.000E+00	4.850E-14	2.696E-13	1.209E-12	8.667E-12	6.740E-11	2.560E-09	9.640E-09	9.725E-09
Am-241	Th-229+D		1.000E+00	8.297E-18	1.135E-16	1.244E-15	2.910E-14	5.319E-13	9.495E-12	7.710E-11	3.321E-10
Am-241	EDSR(j)			5.824E-01	5.814E-01	5.795E-01	5.727E-01	5.541E-01	4.941E-01	3.529E-01	1.087E-01
OCs-137+D	Cs-137+D		1.000E+00	2.099E+00	2.051E+00	1.956E+00	1.659E+00	1.037E+00	2.000E-01	1.815E-03	1.293E-10
OSr-90+D	Sr-90+D		1.000E+00	8.004E+00	7.591E+00	6.824E+00	4.700E+00	1.620E+00	2.587E-01	6.109E-06	3.911E-22

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

Single Radionuclide Soil Guidelines G(i,t) in pCi/g									
Basic Radiation Dose Limit = 2.500E+01 mrem/yr									
0Nuclide (i)	t =	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Am-241	4.293E+01	4.300E+01	4.314E+01	4.365E+01	4.512E+01	5.060E+01	7.084E+01	2.299E+02	
Cs-137	1.191E+01	1.219E+01	1.278E+01	1.507E+01	2.411E+01	1.250E+02	1.377E+04	1.933E+11	
Sr-90	3.123E+00	3.293E+00	3.664E+00	5.319E+00	1.544E+01	9.664E+01	4.092E+06	*1.366E+14	

\*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)						
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g						
at tmin = time of minimum single radionuclide soil guideline						
and at tmax = time of maximum total dose = 0.000E+00 years						
0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.091E+00	0.000E+00	5.824E-01	4.293E+01	5.824E-01	4.293E+01
Cs-137	1.016E+00	0.000E+00	2.099E+00	1.191E+01	2.099E+00	1.191E+01
Sr-90	5.620E-01	0.000E+00	8.004E+00	3.123E+00	8.004E+00	3.123E+00

### Appendix H37: RESRAD 7.0 Output for Area 3.1 Am-241

RESRAD, Version 7.0      T½ Limit = 180 days      07/22/2016 11:16 Page 19  
 Summary : RESRAD Default Parameters  
 File : C:\RESRAD\_FAMILY\RESRAD\7.0\USERFILES\AREA 3.1 AM.RAD

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

ONuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr								
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
Am-241	Am-241	1.000E+00	6.354E-01	6.343E-01	6.322E-01	6.248E-01	6.041E-01	5.370E-01	3.836E-01	1.181E-01	
ONp-237	Am-241	1.000E+00	2.073E-06	6.260E-06	1.391E-05	3.414E-05	3.726E-04	2.012E-03	1.478E-03	4.791E-04	
OU-233	Am-241	1.000E+00	5.292E-14	2.941E-13	1.319E-12	9.456E-12	7.354E-11	2.793E-09	1.052E-08	1.061E-08	
OTh-229	Am-241	1.000E+00	9.052E-18	1.238E-16	1.358E-15	3.175E-14	5.803E-13	1.036E-11	8.411E-11	3.623E-10	
OCs-137	Cs-137	1.000E+00	2.133E+00	2.083E+00	1.988E+00	1.686E+00	1.054E+00	2.032E-01	1.844E-03	1.314E-10	
OSr-90	Sr-90	1.000E+00	4.498E+00	4.266E+00	3.835E+00	2.641E+00	9.103E-01	1.454E-01	3.433E-06	2.198E-22	

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

Individual Nuclide Soil Concentration  
 Parent Nuclide and Branch Fraction Indicated

ONuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g								
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
Am-241	Am-241	1.000E+00	1.091E+00	1.089E+00	1.086E+00	1.073E+00	1.037E+00	9.221E-01	6.586E-01	2.028E-01	
ONp-237	Am-241	1.000E+00	0.000E+00	3.417E-07	9.634E-07	2.607E-06	4.660E-06	4.947E-06	3.542E-06	1.091E-06	
OU-233	Am-241	1.000E+00	0.000E+00	7.508E-13	6.464E-12	6.184E-11	3.800E-10	1.614E-09	3.099E-09	1.697E-09	
OTh-229	Am-241	1.000E+00	0.000E+00	2.377E-17	6.206E-16	2.053E-14	4.144E-13	7.170E-12	5.485E-11	2.145E-10	
OCs-137	Cs-137	1.000E+00	1.016E+00	9.924E-01	9.468E-01	8.031E-01	5.019E-01	9.680E-02	8.786E-04	6.259E-11	
OSr-90	Sr-90	1.000E+00	5.620E-01	5.328E-01	4.790E-01	3.299E-01	1.137E-01	2.731E-03	6.450E-08	4.129E-24	

THF(i) is the thread fraction of the parent nuclide.  
 ORESALC.EXE execution time = 1.62 seconds