

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Table of ContentsPart I: Mixture Sums and Single Radionuclide Guidelines

Dose Conversion Factor (and Related) Parameter Summary ...	2
Site-Specific Parameter Summary	5
Summary of Pathway Selections	10
Contaminated Zone and Total Dose Summary	11
Total Dose Components	
Time = 0.000E+00	12
Time = 1.000E+00	13
Time = 3.000E+00	14
Time = 1.000E+01	15
Time = 4.049E+01	16
Time = 1.000E+02	17
Time = 3.000E+02	18
Time = 1.000E+03	19
Dose/Source Ratios Summed Over All Pathways	20
Single Radionuclide Soil Guidelines	20
Dose Per Nuclide Summed Over All Pathways	22
Soil Concentration Per Nuclide	23

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Dose Conversion Factor (and Related) Parameter Summary

Dose Library: Zion BFM Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ba-137m (Source: FGR 12)	3.606E+00	3.606E+00	DCF1(1)
A-1	Co-60 (Source: FGR 12)	1.622E+01	1.622E+01	DCF1(2)
A-1	Cs-134 (Source: FGR 12)	9.472E+00	9.472E+00	DCF1(3)
A-1	Cs-137 (Source: FGR 12)	7.510E-04	7.510E-04	DCF1(4)
A-1	Eu-152 (Source: FGR 12)	7.006E+00	7.006E+00	DCF1(5)
A-1	Eu-154 (Source: FGR 12)	7.678E+00	7.678E+00	DCF1(6)
A-1	Gd-152 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(7)
A-1	H-3 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(8)
A-1	Nd-144 (Source: Zion BFM)	0.000E+00	-1.000E+00	DCF1(9)
A-1	Ni-63 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(10)
A-1	Sm-148 (Source: Zion BFM)	0.000E+00	-1.000E+00	DCF1(11)
A-1	Sr-90 (Source: FGR 12)	7.043E-04	7.043E-04	DCF1(12)
A-1	Y-90 (Source: FGR 12)	2.391E-02	2.391E-02	DCF1(13)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Co-60	2.190E-04	2.190E-04	DCF2(1)
B-1	Cs-134	4.620E-05	4.620E-05	DCF2(2)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(3)
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(4)
B-1	Eu-154	2.860E-04	2.860E-04	DCF2(6)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(7)
B-1	H-3	6.400E-08	6.400E-08	DCF2(8)
B-1	Nd-144	7.040E-02	-1.000E+00	DCF2(9)
B-1	Ni-63	6.290E-06	6.290E-06	DCF2(10)
B-1	Sm-148	7.340E-02	-1.000E+00	DCF2(11)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(12)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Co-60	2.690E-05	2.690E-05	DCF3(1)
D-1	Cs-134	7.330E-05	7.330E-05	DCF3(2)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(3)
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(4)
D-1	Eu-154	9.550E-06	9.550E-06	DCF3(6)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(7)
D-1	H-3	6.400E-08	6.400E-08	DCF3(8)
D-1	Nd-144	1.510E-04	-1.000E+00	DCF3(9)
D-1	Ni-63	5.770E-07	5.770E-07	DCF3(10)
D-1	Sm-148	1.580E-04	-1.000E+00	DCF3(11)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(12)
D-34	Food transfer factors:			
D-34	Co-60 , plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(1,1)
D-34	Co-60 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.800E-02	2.000E-02	RTF(1,2)
D-34	Co-60 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.200E-03	2.000E-03	RTF(1,3)
D-34				
D-34	Cs-134 , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(2,1)
D-34	Cs-134 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	6.500E-02	3.000E-02	RTF(2,2)
D-34	Cs-134 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.400E-02	8.000E-03	RTF(2,3)
D-34				

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

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

Dose Library: Zion BFM Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(3,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	6.500E-02	3.000E-02	RTF(3,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.400E-02	8.000E-03	RTF(3,3)
D-34				
D-34	Eu-152 , plant/soil concentration ratio, dimensionless	2.000E-03	2.500E-03	RTF(4,1)
D-34	Eu-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	4.000E-03	2.000E-03	RTF(4,2)
D-34	Eu-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-05	5.000E-05	RTF(4,3)
D-34				
D-34	Eu-154 , plant/soil concentration ratio, dimensionless	2.000E-03	2.500E-03	RTF(6,1)
D-34	Eu-154 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	4.000E-03	2.000E-03	RTF(6,2)
D-34	Eu-154 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-05	5.000E-05	RTF(6,3)
D-34				
D-34	Gd-152 , plant/soil concentration ratio, dimensionless	2.000E-03	2.500E-03	RTF(7,1)
D-34	Gd-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(7,2)
D-34	Gd-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-05	2.000E-05	RTF(7,3)
D-34				
D-34	H-3 , plant/soil concentration ratio, dimensionless	4.800E+00	4.800E+00	RTF(8,1)
D-34	H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(8,2)
D-34	H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(8,3)
D-34				
D-34	Nd-144 , plant/soil concentration ratio, dimensionless	2.000E-03	2.400E-03	RTF(9,1)
D-34	Nd-144 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(9,2)
D-34	Nd-144 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-05	2.000E-05	RTF(9,3)
D-34				
D-34	Ni-63 , plant/soil concentration ratio, dimensionless	5.000E-02	5.000E-02	RTF(10,1)
D-34	Ni-63 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	9.200E-03	5.000E-03	RTF(10,2)
D-34	Ni-63 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.200E-02	2.000E-02	RTF(10,3)
D-34				
D-34	Sm-148 , plant/soil concentration ratio, dimensionless	2.000E-03	2.500E-03	RTF(11,1)
D-34	Sm-148 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(11,2)
D-34	Sm-148 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-05	2.000E-05	RTF(11,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	5.900E-01	3.000E-01	RTF(12,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.300E-02	8.000E-03	RTF(12,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.700E-03	2.000E-03	RTF(12,3)
D-34				
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Co-60 , fish	3.000E+02	3.000E+02	BIOFAC(1,1)
D-5	Co-60 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(1,2)
D-5				
D-5	Cs-134 , fish	2.000E+03	2.000E+03	BIOFAC(2,1)
D-5	Cs-134 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(2,2)
D-5				
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(3,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(4,2)
D-5				

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

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

Dose Library: Zion BFM Plus FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Eu-154 , fish	5.000E+01	5.000E+01	BIOFAC(6,1)
D-5	Eu-154 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(6,2)
D-5				
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(7,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(7,2)
D-5				
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(8,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(8,2)
D-5				
D-5	Nd-144 , fish	1.000E+02	1.000E+02	BIOFAC(9,1)
D-5	Nd-144 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(9,2)
D-5				
D-5	Ni-63 , fish	1.000E+02	1.000E+02	BIOFAC(10,1)
D-5	Ni-63 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5				
D-5	Sm-148 , fish	2.500E+01	2.500E+01	BIOFAC(11,1)
D-5	Sm-148 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(11,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(12,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12,2)

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

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

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

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)	1.120E+01	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	1.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	2.870E+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)	1.000E+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)	4.049E+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): Co-60	1.000E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Cs-134	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Cs-137	1.000E+00	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Eu-152	1.000E+00	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Eu-154	1.000E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): H-3	1.000E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): Ni-63	1.000E+00	0.000E+00	---	S1(10)
R012	Initial principal radionuclide (pCi/g): Sr-90	1.000E+00	0.000E+00	---	S1(12)
R012	Concentration in groundwater (pCi/L): Co-60	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Cs-134	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Eu-154	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): H-3	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): Ni-63	not used	0.000E+00	---	W1(10)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(12)
R013	Cover depth (m)	3.600E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	1.800E+00	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	1.500E-03	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.800E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.500E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	3.700E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	6.600E-02	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	2.880E+03	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	2.890E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	4.200E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	7.200E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	8.300E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	1.900E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.800E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.500E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.900E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	6.600E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.695E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	1.800E-03	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
R014	Well pump intake depth (m below water table)	5.600E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.250E+03	2.500E+02	---	UW
R015	Number of unsaturated zone strata	0	1	---	NS
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm**3/g)	2.230E+02	1.000E+03	---	DCNUCC (1)
R016	Saturated zone (cm**3/g)	2.230E+02	1.000E+03	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.763E-05	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for Cs-134				
R016	Contaminated zone (cm**3/g)	4.500E+01	4.600E+03	---	DCNUCC (2)
R016	Saturated zone (cm**3/g)	4.500E+01	4.600E+03	---	DCNUCS (2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.821E-04	ALEACH (2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	4.500E+01	4.600E+03	---	DCNUCC (3)
R016	Saturated zone (cm**3/g)	4.500E+01	4.600E+03	---	DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.821E-04	ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (3)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	9.500E+01	-1.000E+00	---	DCNUCC (4)
R016	Saturated zone (cm**3/g)	9.500E+01	-1.000E+00	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.289E-04	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for Eu-154				
R016	Contaminated zone (cm**3/g)	9.500E+01	-1.000E+00	---	DCNUCC (6)
R016	Saturated zone (cm**3/g)	9.500E+01	-1.000E+00	---	DCNUCS (6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.289E-04	ALEACH (6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC (8)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS (8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.060E-01	ALEACH (8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (8)

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Ni-63				
R016	Contaminated zone (cm**3/g)	6.200E+01	1.000E+03	---	DCNUCC(10)
R016	Saturated zone (cm**3/g)	6.200E+01	1.000E+03	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.503E-04	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	2.300E+00	3.000E+01	---	DCNUCC(12)
R016	Saturated zone (cm**3/g)	2.300E+00	3.000E+01	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.697E-03	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCC(7)
R016	Saturated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.641E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for daughter Nd-144				
R016	Contaminated zone (cm**3/g)	1.580E+02	1.580E+02	---	DCNUCC(9)
R016	Saturated zone (cm**3/g)	1.580E+02	1.580E+02	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.377E-04	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Sm-148				
R016	Contaminated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCC(11)
R016	Saturated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.641E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.350E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.700E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.490E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.240E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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)	2.140E+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)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.830E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.780E+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	not used	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)	2.830E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	6.520E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	3.100E+00	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	---	FGWHH
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)	1.260E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.890E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.910E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.500E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.200E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.200E-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	3.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	7.000E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.150E+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
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	1.000E+00	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

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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	---	HMIX
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	1	---	---	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	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g	
Area: 64500.00 square meters	Co-60	1.000E+00
Thickness: 11.20 meters	Cs-134	1.000E+00
Cover Depth: 3.60 meters	Cs-137	1.000E+00
	Eu-152	1.000E+00
	Eu-154	1.000E+00
	H-3	1.000E+00
	Ni-63	1.000E+00
	Sr-90	1.000E+00

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	4.049E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.753E+01	4.548E+01	4.197E+01	3.285E+01	1.218E+01	1.801E+00	5.466E-03	1.499E-05
M(t):	1.901E+00	1.819E+00	1.679E+00	1.314E+00	4.874E-01	7.202E-02	2.186E-04	5.995E-07

Maximum TDOSE(t): 4.753E+01 mrem/yr at t = 0.000E+00 years

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.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.
Co-60	4.753E-22	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	0.000E+00	0.0000
Cs-134	1.518E-26	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	0.000E+00	0.0000
Cs-137	1.741E-27	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	0.000E+00	0.0000
Eu-152	4.313E-24	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	0.000E+00	0.0000
Eu-154	8.904E-24	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	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	0.000E+00	0.0000
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	0.000E+00	0.0000
Total	4.885E-22	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	0.000E+00	0.0000

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.
Co-60	5.398E-02	0.0011	0.000E+00	0.0000	0.000E+00	0.0000	8.016E-03	0.0002	3.781E-02	0.0008	1.244E-02	0.0003	1.122E-01	0.0024
Cs-134	6.583E-01	0.0139	0.000E+00	0.0000	0.000E+00	0.0000	9.687E-02	0.0020	5.164E-01	0.0109	6.630E-01	0.0140	1.935E+00	0.0407
Cs-137	5.226E-01	0.0110	0.000E+00	0.0000	0.000E+00	0.0000	7.690E-02	0.0016	4.100E-01	0.0086	5.263E-01	0.0111	1.536E+00	0.0323
Eu-152	3.171E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	4.626E-03	0.0001	1.530E-03	0.0000	1.368E-04	0.0000	3.801E-02	0.0008
Eu-154	4.606E-02	0.0010	0.000E+00	0.0000	0.000E+00	0.0000	6.720E-03	0.0001	2.222E-03	0.0000	1.987E-04	0.0000	5.520E-02	0.0012
H-3	1.381E-01	0.0029	0.000E+00	0.0000	0.000E+00	0.0000	2.873E-02	0.0006	8.971E-03	0.0002	4.101E-02	0.0009	2.169E-01	0.0046
Ni-63	4.418E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	6.516E-04	0.0000	4.906E-04	0.0000	1.017E-02	0.0002	1.573E-02	0.0003
Sr-90	2.869E+01	0.6037	0.000E+00	0.0000	0.000E+00	0.0000	4.751E+00	0.1000	4.539E+00	0.0955	5.637E+00	0.1186	4.362E+01	0.9178
Total	3.015E+01	0.6343	0.000E+00	0.0000	0.000E+00	0.0000	4.974E+00	0.1046	5.516E+00	0.1161	6.891E+00	0.1450	4.753E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.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.
Co-60	4.256E-22	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	0.000E+00	0.0000
Cs-134	1.113E-26	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	0.000E+00	0.0000
Cs-137	1.745E-27	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	0.000E+00	0.0000
Eu-152	4.191E-24	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	0.000E+00	0.0000
Eu-154	8.398E-24	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	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	0.000E+00	0.0000
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	0.000E+00	0.0000
Total	4.382E-22	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	0.000E+00	0.0000

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.
Co-60	4.732E-02	0.0010	0.000E+00	0.0000	0.000E+00	0.0000	7.027E-03	0.0002	3.315E-02	0.0007	1.090E-02	0.0002	9.840E-02	0.0022
Cs-134	4.703E-01	0.0103	0.000E+00	0.0000	0.000E+00	0.0000	6.921E-02	0.0015	3.690E-01	0.0081	4.737E-01	0.0104	1.382E+00	0.0304
Cs-137	5.104E-01	0.0112	0.000E+00	0.0000	0.000E+00	0.0000	7.512E-02	0.0017	4.004E-01	0.0088	5.141E-01	0.0113	1.500E+00	0.0330
Eu-152	3.012E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	4.394E-03	0.0001	1.453E-03	0.0000	1.299E-04	0.0000	3.610E-02	0.0008
Eu-154	4.248E-02	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	6.197E-03	0.0001	2.050E-03	0.0000	1.832E-04	0.0000	5.091E-02	0.0011
H-3	1.175E-01	0.0026	0.000E+00	0.0000	0.000E+00	0.0000	2.444E-02	0.0005	7.630E-03	0.0002	3.488E-02	0.0008	1.844E-01	0.0041
Ni-63	4.386E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	6.469E-04	0.0000	4.871E-04	0.0000	1.010E-02	0.0002	1.562E-02	0.0003
Sr-90	2.777E+01	0.6105	0.000E+00	0.0000	0.000E+00	0.0000	4.598E+00	0.1011	4.393E+00	0.0966	5.456E+00	0.1200	4.221E+01	0.9282
Total	2.899E+01	0.6374	0.000E+00	0.0000	0.000E+00	0.0000	4.785E+00	0.1052	5.207E+00	0.1145	6.500E+00	0.1429	4.548E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.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.
Co-60	3.412E-22	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	0.000E+00	0.0000
Cs-134	5.972E-27	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	0.000E+00	0.0000
Cs-137	1.753E-27	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	0.000E+00	0.0000
Eu-152	3.956E-24	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	0.000E+00	0.0000
Eu-154	7.471E-24	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	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	0.000E+00	0.0000
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	0.000E+00	0.0000
Total	3.526E-22	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	0.000E+00	0.0000

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.
Co-60	3.637E-02	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	5.401E-03	0.0001	2.548E-02	0.0006	8.380E-03	0.0002	7.563E-02	0.0018
Cs-134	2.401E-01	0.0057	0.000E+00	0.0000	0.000E+00	0.0000	3.533E-02	0.0008	1.884E-01	0.0045	2.418E-01	0.0058	7.056E-01	0.0168
Cs-137	4.870E-01	0.0116	0.000E+00	0.0000	0.000E+00	0.0000	7.167E-02	0.0017	3.821E-01	0.0091	4.906E-01	0.0117	1.431E+00	0.0341
Eu-152	2.718E-02	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	3.965E-03	0.0001	1.311E-03	0.0000	1.172E-04	0.0000	3.257E-02	0.0008
Eu-154	3.614E-02	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	5.272E-03	0.0001	1.744E-03	0.0000	1.559E-04	0.0000	4.331E-02	0.0010
H-3	8.490E-02	0.0020	0.000E+00	0.0000	0.000E+00	0.0000	1.767E-02	0.0004	5.515E-03	0.0001	2.522E-02	0.0006	1.333E-01	0.0032
Ni-63	4.322E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	6.375E-04	0.0000	4.800E-04	0.0000	9.953E-03	0.0002	1.539E-02	0.0004
Sr-90	2.600E+01	0.6196	0.000E+00	0.0000	0.000E+00	0.0000	4.306E+00	0.1026	4.114E+00	0.0980	5.110E+00	0.1217	3.954E+01	0.9419
Total	2.692E+01	0.6414	0.000E+00	0.0000	0.000E+00	0.0000	4.446E+00	0.1059	4.719E+00	0.1124	5.886E+00	0.1402	4.197E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.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.
Co-60	1.574E-22	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	0.000E+00	0.0000
Cs-134	6.768E-28	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	0.000E+00	0.0000
Cs-137	1.780E-27	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	0.000E+00	0.0000
Eu-152	3.235E-24	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	0.000E+00	0.0000
Eu-154	4.961E-24	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	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	0.000E+00	0.0000
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	0.000E+00	0.0000
Total	1.656E-22	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	0.000E+00	0.0000

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.
Co-60	1.448E-02	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	2.150E-03	0.0001	1.014E-02	0.0003	3.336E-03	0.0001	3.011E-02	0.0009
Cs-134	2.282E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	3.359E-03	0.0001	1.791E-02	0.0005	2.299E-02	0.0007	6.708E-02	0.0020
Cs-137	4.133E-01	0.0126	0.000E+00	0.0000	0.000E+00	0.0000	6.082E-02	0.0019	3.242E-01	0.0099	4.163E-01	0.0127	1.215E+00	0.0370
Eu-152	1.896E-02	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	2.766E-03	0.0001	9.149E-04	0.0000	8.179E-05	0.0000	2.272E-02	0.0007
Eu-154	2.051E-02	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	2.992E-03	0.0001	9.897E-04	0.0000	8.848E-05	0.0000	2.458E-02	0.0007
H-3	2.726E-02	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	5.674E-03	0.0002	1.771E-03	0.0001	8.098E-03	0.0002	4.281E-02	0.0013
Ni-63	4.108E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	6.059E-04	0.0000	4.562E-04	0.0000	9.459E-03	0.0003	1.463E-02	0.0004
Sr-90	2.067E+01	0.6294	0.000E+00	0.0000	0.000E+00	0.0000	3.424E+00	0.1042	3.271E+00	0.0996	4.062E+00	0.1237	3.143E+01	0.9569
Total	2.120E+01	0.6453	0.000E+00	0.0000	0.000E+00	0.0000	3.502E+00	0.1066	3.627E+00	0.1104	4.523E+00	0.1377	3.285E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.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 = 4.049E+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.
Co-60	5.411E-24	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	0.000E+00	0.0000
Cs-134	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	0.000E+00	0.0000
Cs-137	1.903E-27	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	0.000E+00	0.0000
Eu-152	1.346E-24	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	0.000E+00	0.0000
Eu-154	8.340E-25	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	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	0.000E+00	0.0000
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	0.000E+00	0.0000
Total	7.594E-24	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	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 4.049E+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.
Co-60	2.619E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.890E-05	0.0000	1.835E-04	0.0000	6.035E-05	0.0000	5.447E-04	0.0000
Cs-134	8.069E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.187E-07	0.0000	6.330E-07	0.0000	8.127E-07	0.0000	2.371E-06	0.0000
Cs-137	2.021E-01	0.0166	0.000E+00	0.0000	0.000E+00	0.0000	2.974E-02	0.0024	1.586E-01	0.0130	2.036E-01	0.0167	5.940E-01	0.0488
Eu-152	3.952E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	5.765E-04	0.0000	1.907E-04	0.0000	1.705E-05	0.0000	4.736E-03	0.0004
Eu-154	1.741E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	2.540E-04	0.0000	8.401E-05	0.0000	7.510E-06	0.0000	2.087E-03	0.0002
H-3	1.936E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.028E-05	0.0000	1.257E-05	0.0000	5.749E-05	0.0000	3.039E-04	0.0000
Ni-63	3.291E-03	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	4.853E-04	0.0000	3.654E-04	0.0000	7.577E-03	0.0006	1.172E-02	0.0010
Sr-90	7.611E+00	0.6246	0.000E+00	0.0000	0.000E+00	0.0000	1.260E+00	0.1034	1.204E+00	0.0988	1.496E+00	0.1227	1.157E+01	0.9497
Total	7.823E+00	0.6420	0.000E+00	0.0000	0.000E+00	0.0000	1.292E+00	0.1060	1.364E+00	0.1119	1.707E+00	0.1401	1.218E+01	1.0000

*Sum of all water independent and dependent pathways.

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.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.
Co-60	7.527E-27	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	0.000E+00	0.0000
Cs-134	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	0.000E+00	0.0000
Cs-137	2.168E-27	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	0.000E+00	0.0000
Eu-152	2.433E-25	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	0.000E+00	0.0000
Eu-154	2.568E-26	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	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	0.000E+00	0.0000
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	0.000E+00	0.0000
Total	2.786E-25	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	0.000E+00	0.0000

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.
Co-60	1.040E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.545E-08	0.0000	7.288E-08	0.0000	2.397E-08	0.0000	2.163E-07	0.0000
Cs-134	1.653E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.433E-16	0.0000	1.297E-15	0.0000	1.665E-15	0.0000	4.859E-15	0.0000
Cs-137	5.004E-02	0.0278	0.000E+00	0.0000	0.000E+00	0.0000	7.364E-03	0.0041	3.926E-02	0.0218	5.040E-02	0.0280	1.471E-01	0.0817
Eu-152	1.851E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	2.701E-05	0.0000	8.934E-06	0.0000	7.986E-07	0.0000	2.219E-04	0.0001
Eu-154	1.413E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.062E-06	0.0000	6.818E-07	0.0000	6.095E-08	0.0000	1.694E-05	0.0000
H-3	1.238E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.577E-09	0.0000	8.045E-10	0.0000	3.678E-09	0.0000	1.944E-08	0.0000
Ni-63	2.134E-03	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	3.148E-04	0.0002	2.370E-04	0.0001	4.915E-03	0.0027	7.601E-03	0.0042
Sr-90	1.082E+00	0.6012	0.000E+00	0.0000	0.000E+00	0.0000	1.793E-01	0.0996	1.713E-01	0.0951	2.127E-01	0.1181	1.646E+00	0.9140
Total	1.135E+00	0.6303	0.000E+00	0.0000	0.000E+00	0.0000	1.870E-01	0.1038	2.108E-01	0.1171	2.680E-01	0.1489	1.801E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.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.
Co-60	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	0.000E+00	0.0000
Cs-134	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	0.000E+00	0.0000
Cs-137	3.360E-27	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	0.000E+00	0.0000
Eu-152	7.738E-28	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	0.000E+00	0.0000
Eu-154	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	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	0.000E+00	0.0000
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	0.000E+00	0.0000
Total	4.134E-27	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	0.000E+00	0.0000

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.
Co-60	3.866E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.742E-20	0.0000	2.708E-19	0.0000	8.908E-20	0.0000	8.040E-19	0.0000
Cs-134	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	0.000E+00	0.0000
Cs-137	4.589E-04	0.0840	0.000E+00	0.0000	0.000E+00	0.0000	6.753E-05	0.0124	3.600E-04	0.0659	4.622E-04	0.0846	1.349E-03	0.2468
Eu-152	6.312E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.208E-10	0.0000	3.046E-10	0.0000	2.723E-11	0.0000	7.564E-09	0.0000
Eu-154	1.330E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.941E-13	0.0000	6.419E-14	0.0000	5.738E-15	0.0000	1.594E-12	0.0000
H-3	9.954E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.071E-23	0.0000	6.466E-24	0.0000	2.956E-23	0.0000	1.563E-22	0.0000
Ni-63	4.982E-04	0.0911	0.000E+00	0.0000	0.000E+00	0.0000	7.348E-05	0.0134	5.533E-05	0.0101	1.147E-03	0.2099	1.774E-03	0.3246
Sr-90	1.541E-03	0.2819	0.000E+00	0.0000	0.000E+00	0.0000	2.552E-04	0.0467	2.438E-04	0.0446	3.028E-04	0.0554	2.343E-03	0.4286
Total	2.498E-03	0.4571	0.000E+00	0.0000	0.000E+00	0.0000	3.962E-04	0.0725	6.592E-04	0.1206	1.912E-03	0.3499	5.466E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.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.
Co-60	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	0.000E+00	0.0000
Cs-134	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	0.000E+00	0.0000
Cs-137	1.557E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.520E-12	0.0000	4.955E-12	0.0000	8.800E-12	0.0000	0.000E+00	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.704E-16	0.0000	1.299E-17	0.0000	3.214E-18	0.0000	0.000E+00	0.0000
Eu-154	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.575E-07	0.0572	1.089E-07	0.0073	3.125E-06	0.2085	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.233E-14	0.0000	4.012E-15	0.0000	6.871E-15	0.0000	0.000E+00	0.0000
Total	1.557E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.575E-07	0.0572	1.089E-07	0.0073	3.125E-06	0.2085	0.000E+00	0.0000

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.
Co-60	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	0.000E+00	0.0000
Cs-134	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	0.000E+00	0.0000
Cs-137	3.388E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.986E-12	0.0000	2.658E-11	0.0000	3.412E-11	0.0000	1.188E-10	0.0000
Eu-152	3.330E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.858E-16	0.0000	8.033E-17	0.0000	1.436E-17	0.0000	4.397E-15	0.0000
Eu-154	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	0.000E+00	0.0000
H-3	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	0.000E+00	0.0000
Ni-63	3.060E-06	0.2041	0.000E+00	0.0000	0.000E+00	0.0000	4.513E-07	0.0301	3.398E-07	0.0227	7.045E-06	0.4701	1.499E-05	1.0000
Sr-90	1.677E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.776E-14	0.0000	2.653E-14	0.0000	3.295E-14	0.0000	2.881E-13	0.0000
Total	3.060E-06	0.2042	0.000E+00	0.0000	0.000E+00	0.0000	4.513E-07	0.0301	3.398E-07	0.0227	7.045E-06	0.4701	1.499E-05	1.0000

*Sum of all water independent and dependent pathways.

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

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

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)								
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	4.049E+01	1.000E+02	3.000E+02	1.000E+03	
Co-60	Co-60	1.000E+00	1.122E-01	9.840E-02	7.563E-02	3.011E-02	5.447E-04	2.163E-07	8.040E-19	0.000E+00	
Cs-134	Cs-134	1.000E+00	1.935E+00	1.382E+00	7.056E-01	6.708E-02	2.371E-06	4.859E-15	9.809E-45	0.000E+00	
Cs-137+D	Cs-137+D	1.000E+00	1.536E+00	1.500E+00	1.431E+00	1.215E+00	5.940E-01	1.471E-01	1.349E-03	1.188E-10	
Eu-152	Eu-152	7.210E-01	2.740E-02	2.603E-02	2.348E-02	1.638E-02	3.415E-03	1.600E-04	5.454E-09	1.280E-24	
Eu-152	Eu-152	2.790E-01	1.060E-02	1.007E-02	9.087E-03	6.340E-03	1.321E-03	6.191E-05	2.110E-09	4.954E-25	
Eu-152	Gd-152	2.790E-01	3.789E-16	5.625E-16	8.998E-16	1.841E-15	3.559E-15	3.984E-15	3.985E-15	4.397E-15	
Eu-152	Sm-148	2.790E-01	7.049E-30	6.696E-30	6.042E-30	4.216E-30	8.806E-31	4.357E-32	2.416E-33	4.639E-29	
Eu-152	Nd-144	2.790E-01	4.760E-38	4.759E-38	4.758E-38	4.754E-38	4.734E-38	4.695E-38	4.568E-38	4.147E-38	
Eu-152	ΣDSR(j)		1.060E-02	1.007E-02	9.087E-03	6.340E-03	1.321E-03	6.191E-05	2.110E-09	4.397E-15	
Eu-154	Eu-154	1.000E+00	5.520E-02	5.091E-02	4.331E-02	2.458E-02	2.087E-03	1.694E-05	1.594E-12	4.140E-37	
H-3	H-3	1.000E+00	2.169E-01	1.844E-01	1.333E-01	4.281E-02	3.039E-04	1.944E-08	1.563E-22	0.000E+00	
Ni-63	Ni-63	1.000E+00	1.573E-02	1.562E-02	1.539E-02	1.463E-02	1.172E-02	7.601E-03	1.774E-03	1.499E-05	
Sr-90+D	Sr-90+D	1.000E+00	4.362E+01	4.221E+01	3.954E+01	3.143E+01	1.157E+01	1.646E+00	2.343E-03	2.881E-13	

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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

Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	4.049E+01	1.000E+02	3.000E+02	1.000E+03
Co-60		2.227E+02	2.541E+02	3.306E+02	8.304E+02	4.590E+04	1.156E+08	*1.113E+15	*1.113E+15
Cs-134		1.292E+01	1.809E+01	3.543E+01	3.727E+02	1.054E+07	*1.283E+15	*1.283E+15	*1.283E+15
Cs-137		1.628E+01	1.667E+01	1.747E+01	2.058E+01	4.209E+01	1.700E+02	1.854E+04	2.104E+11
Eu-152		6.578E+02	6.925E+02	7.675E+02	1.100E+03	5.279E+03	1.127E+05	3.305E+09	*1.727E+14
Eu-154		4.529E+02	4.910E+02	5.773E+02	1.017E+03	1.198E+04	1.476E+06	1.568E+13	*2.685E+14
H-3		1.153E+02	1.356E+02	1.875E+02	5.840E+02	8.226E+04	1.286E+09	*9.621E+15	*9.621E+15
Ni-63		1.589E+03	1.601E+03	1.624E+03	1.709E+03	2.133E+03	3.289E+03	1.409E+04	1.668E+06
Sr-90		5.732E-01	5.922E-01	6.323E-01	7.954E-01	2.161E+00	1.519E+01	1.067E+04	8.677E+13

*At specific activity limit

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

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

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Co-60	1.000E+00	0.000E+00	1.122E-01	2.227E+02	1.122E-01	2.227E+02
Cs-134	1.000E+00	0.000E+00	1.935E+00	1.292E+01	1.935E+00	1.292E+01
Cs-137	1.000E+00	0.000E+00	1.536E+00	1.628E+01	1.536E+00	1.628E+01
Eu-152	1.000E+00	0.000E+00	3.801E-02	6.578E+02	3.801E-02	6.578E+02
Eu-154	1.000E+00	0.000E+00	5.520E-02	4.529E+02	5.520E-02	4.529E+02
H-3	1.000E+00	0.000E+00	2.169E-01	1.153E+02	2.169E-01	1.153E+02
Ni-63	1.000E+00	0.000E+00	1.573E-02	1.589E+03	1.573E-02	1.589E+03
Sr-90	1.000E+00	0.000E+00	4.362E+01	5.732E-01	4.362E+01	5.732E-01

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

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

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr								
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	4.049E+01	1.000E+02	3.000E+02	1.000E+03	
Co-60	Co-60	1.000E+00	1.122E-01	9.840E-02	7.563E-02	3.011E-02	5.447E-04	2.163E-07	8.040E-19	0.000E+00	
Cs-134	Cs-134	1.000E+00	1.935E+00	1.382E+00	7.056E-01	6.708E-02	2.371E-06	4.859E-15	0.000E+00	0.000E+00	
Cs-137	Cs-137	1.000E+00	1.536E+00	1.500E+00	1.431E+00	1.215E+00	5.940E-01	1.471E-01	1.349E-03	1.188E-10	
Eu-152	Eu-152	7.210E-01	2.740E-02	2.603E-02	2.348E-02	1.638E-02	3.415E-03	1.600E-04	5.454E-09	1.280E-24	
Eu-152	Eu-152	2.790E-01	1.060E-02	1.007E-02	9.087E-03	6.340E-03	1.321E-03	6.191E-05	2.110E-09	4.954E-25	
Eu-152	ΣDOSE(j)		3.801E-02	3.610E-02	3.257E-02	2.272E-02	4.736E-03	2.219E-04	7.564E-09	1.775E-24	
Gd-152	Eu-152	2.790E-01	3.789E-16	5.625E-16	8.998E-16	1.841E-15	3.559E-15	3.984E-15	3.985E-15	4.397E-15	
Sm-148	Eu-152	2.790E-01	6.002E-30	5.701E-30	5.144E-30	3.589E-30	0.000E+00	0.000E+00	0.000E+00	4.608E-29	
Nd-144	Eu-152	2.790E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Eu-154	Eu-154	1.000E+00	5.520E-02	5.091E-02	4.331E-02	2.458E-02	2.087E-03	1.694E-05	1.594E-12	0.000E+00	
H-3	H-3	1.000E+00	2.169E-01	1.844E-01	1.333E-01	4.281E-02	3.039E-04	1.944E-08	1.563E-22	0.000E+00	
Ni-63	Ni-63	1.000E+00	1.573E-02	1.562E-02	1.539E-02	1.463E-02	1.172E-02	7.601E-03	1.774E-03	1.499E-05	
Sr-90	Sr-90	1.000E+00	4.362E+01	4.221E+01	3.954E+01	3.143E+01	1.157E+01	1.646E+00	2.343E-03	2.881E-13	

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

Summary : RESRAD Default

File : C:\USERS\DAVID FAUVER\DOCUMENTS\ZION\RESRAD\TSD\BFM DOSE FACTOR\BFM RESRAD INPUT FILE\FINAL\ZION BFM.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g								
			t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	4.049E+01	1.000E+02	3.000E+02	1.000E+03	
Co-60	Co-60	1.000E+00	1.000E+00	8.767E-01	6.738E-01	2.682E-01	4.853E-03	1.928E-06	7.163E-18	0.000E+00	
Cs-134	Cs-134	1.000E+00	1.000E+00	7.145E-01	3.648E-01	3.467E-02	1.226E-06	2.511E-15	1.541E-44	0.000E+00	
Cs-137	Cs-137	1.000E+00	1.000E+00	9.768E-01	9.320E-01	7.909E-01	3.868E-01	9.576E-02	8.782E-04	6.485E-11	
Eu-152	Eu-152	7.210E-01	7.210E-01	6.849E-01	6.179E-01	4.311E-01	8.985E-02	4.210E-03	1.435E-07	3.319E-23	
Eu-152	Eu-152	2.790E-01	2.790E-01	2.650E-01	2.391E-01	1.668E-01	3.477E-02	1.629E-03	5.553E-08	1.284E-23	
Eu-152	ΣS(j):		1.000E+00	9.499E-01	8.570E-01	5.979E-01	1.246E-01	5.839E-03	1.990E-07	4.603E-23	
Gd-152	Eu-152	2.790E-01	0.000E+00	1.745E-15	4.978E-15	1.400E-14	3.045E-14	3.454E-14	3.456E-14	3.393E-14	
Sm-148	Eu-152	2.790E-01	0.000E+00	8.715E-32	7.584E-31	7.521E-30	8.084E-29	2.775E-28	9.600E-28	3.294E-27	
Nd-144	Eu-152	2.790E-01	0.000E+00	0.000E+00	0.000E+00	8.408E-45	3.784E-43	3.561E-42	4.053E-41	4.717E-40	
Eu-154	Eu-154	1.000E+00	1.000E+00	9.223E-01	7.845E-01	4.453E-01	3.780E-02	3.068E-04	2.888E-11	7.389E-36	
H-3	H-3	1.000E+00	1.000E+00	8.502E-01	6.146E-01	1.974E-01	1.401E-03	8.965E-08	7.205E-22	0.000E+00	
Ni-63	Ni-63	1.000E+00	1.000E+00	9.928E-01	9.784E-01	9.298E-01	7.449E-01	4.831E-01	1.128E-01	6.927E-04	
Sr-90	Sr-90	1.000E+00	1.000E+00	9.678E-01	9.064E-01	7.206E-01	2.653E-01	3.773E-02	5.371E-05	5.845E-15	

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

RESCALC.EXE execution time = 0.84 seconds