

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

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Part II: Source Terms, Factors, and Parameters for Individual Pathways

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Iteration Log for Computation of the Time of Maximum Ra-226 Dose/Source Ratio  
Pathway: Radon (water independent)

Tolerance for tmax = 1.0E-03 (fractional accuracy)

Iteration Number	t (years)	DSR(t) (mrem/yr)/(pCi/g)	Step Size (years)	Step Type
0	5.84341E+03	4.14287E-05		
1	5.71337E+03	4.13371E-05	-1.30041E+02	parabolic
2	5.81214E+03	4.18651E-05	-3.12781E+01	parabolic
3	5.78077E+03	4.16966E-05	-3.13682E+01	parabolic
4	5.80516E+03	4.18276E-05	-6.97696E+00	parabolic
5	5.82408E+03	4.17784E-05	1.19473E+01	golden section
6	5.81795E+03	4.18896E-05	5.81214E+00	parabolic

Notes:

- 1) Step size always from t with current largest DSR(t) .
- 2) Parabolic step based on parabola maximum through the current best triplet.
- 3) Golden section step,  $0.5*(3-\text{SQRT}(5))$  of larger interval bracketing maximum, taken only if trial parabolic step fails.
- 4) Direct step to a previous t only on last iteration and only if prior iteration met convergence test but DSR(t) was smaller than the previous value.

Iteration Log for Computation of the Time of Maximum Ra-226 Dose/Source Ratio  
All Pathways Summed

Tolerance for tmax = 1.0E-03 (fractional accuracy)

Iteration Number	t (years)	DSR(t) (mrem/yr)/(pCi/g)	Step Size (years)	Step Type
0	5.84341E+03	4.14287E-05		
1	5.71337E+03	4.13371E-05	-1.30041E+02	parabolic
2	5.81214E+03	4.18651E-05	-3.12781E+01	parabolic
3	5.78077E+03	4.16966E-05	-3.13682E+01	parabolic
4	5.80516E+03	4.18276E-05	-6.97696E+00	parabolic
5	5.82408E+03	4.17784E-05	1.19473E+01	golden section
6	5.81795E+03	4.18896E-05	5.81214E+00	parabolic

- Notes:
- 1) Step size always from t with current largest DSR(t) .
  - 2) Parabolic step based on parabola maximum through the current best triplet.
  - 3) Golden section step,  $0.5*(3-\sqrt{5})$  of larger interval bracketing maximum, taken only if trial parabolic step fails.
  - 4) Direct step to a previous t only on last iteration and only if prior iteration met convergence test but DSR(t) was smaller than the previous value.

Iteration Log for Computation of the Time of Maximum Th-230 Dose/Source Ratio  
Pathway: Radon (water independent)

Tolerance for tmax = 1.0E-03 (fractional accuracy)

Iteration Number	t (years)	DSR(t) (mrem/yr)/(pCi/g)	Step Size (years)	Step Type
0	8.98000E+03	4.82822E-04		
1	9.10914E+03	4.82838E-04	1.29137E+02	parabolic
2	9.10003E+03	4.82838E-04	-7.80716E-01	parabolic
3	9.11825E+03	4.82838E-04	9.10914E+00	parabolic
4	9.17284E+03	4.82834E-04	5.45988E+01	golden section
5	9.12736E+03	4.82837E-04	9.11825E+00	parabolic
6	9.11825E+03	4.82838E-04	0.00000E+00	direct

Notes:

- 1) Step size always from t with current largest DSR(t) .
- 2) Parabolic step based on parabola maximum through the current best triplet.
- 3) Golden section step,  $0.5*(3-\text{SQRT}(5))$  of larger interval bracketing maximum, taken only if trial parabolic step fails.
- 4) Direct step to a previous t only on last iteration and only if prior iteration met convergence test but DSR(t) was smaller than the previous value.

Iteration Log for Computation of the Time of Maximum Th-230 Dose/Source Ratio  
All Pathways Summed

Tolerance for tmax = 1.0E-03 (fractional accuracy)

Iteration Number	t (years)	DSR(t) (mrem/yr)/(pCi/g)	Step Size (years)	Step Type
0	8.98000E+03	4.82822E-04		
1	9.10914E+03	4.82838E-04	1.29137E+02	parabolic
2	9.10003E+03	4.82838E-04	-7.80716E-01	parabolic
3	9.11825E+03	4.82838E-04	9.10914E+00	parabolic
4	9.17284E+03	4.82834E-04	5.45988E+01	golden section
5	9.12736E+03	4.82837E-04	9.11825E+00	parabolic
6	9.11825E+03	4.82838E-04	0.00000E+00	direct

Notes:

- 1) Step size always from t with current largest DSR(t) .
- 2) Parabolic step based on parabola maximum through the current best triplet.
- 3) Golden section step,  $0.5 \cdot (3 - \sqrt{5})$  of larger interval bracketing maximum, taken only if trial parabolic step fails.
- 4) Direct step to a previous t only on last iteration and only if prior iteration met convergence test but DSR(t) was smaller than the previous value.

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Iteration Log for Computation of the Time of Maximum Total Dose  
Pathway: Radon (water independent)

Tolerance for tmax = 1.0E-03 (fractional accuracy)

Iteration Number	t (years)	TDOSE(t) (mrem/yr)	Step Size (years)	Step Type
0	8.98000E+03	2.47519E+01		
1	8.97102E+03	2.47519E+01	-2.31163E+00	parabolic
2	8.98898E+03	2.47519E+01	8.98000E+00	parabolic
3	8.98000E+03	2.47519E+01	0.00000E+00	direct

## Notes:

- 1) Step size always from t with current largest TDOSE(t).
- 2) Parabolic step based on parabola maximum through the current best triplet.
- 3) Golden section step,  $0.5*(3-\text{SQRT}(5))$  of larger interval bracketing maximum, taken only if trial parabolic step fails.
- 4) Direct step to a previous t only on last iteration and only if prior iteration met convergence test but TDOSE(t) was smaller than the previous value.

Detailed: RESRAD Default Parameters

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Iteration Log for Computation of the Time of Maximum Total Dose  
All Pathways Summed

Tolerance for tmax = 1.0E-03 (fractional accuracy)

Iteration Number	t (years)	TDOSE(t) (mrem/yr)	Step Size (years)	Step Type
0	8.98000E+03	2.47519E+01		
1	8.97102E+03	2.47519E+01	-2.31163E+00	parabolic
2	8.98898E+03	2.47519E+01	8.98000E+00	parabolic
3	8.98000E+03	2.47519E+01	0.00000E+00	direct

## Notes:

- 1) Step size always from t with current largest TDOSE(t).
- 2) Parabolic step based on parabola maximum through the current best triplet.
- 3) Golden section step,  $0.5*(3-\text{SQRT}(5))$  of larger interval bracketing maximum, taken only if trial parabolic step fails.
- 4) Direct step to a previous t only on last iteration and only if prior iteration met convergence test but TDOSE(t) was smaller than the previous value.



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Source Factors for Ingrowth and Decay

Radioactivity Factors Only

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	ID(j,t) = CUMBRF(j)*S1(j,t)/S1(i,0)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	3.169E-14	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	1.000E+00	6.484E-01	2.044E-02	1.314E-02
Ra-226	Pb-210	1.000E+00	0.000E+00	6.576E-01	2.073E-02	1.332E-02
Th-230	Th-230	1.000E+00	1.000E+00	9.910E-01	9.223E-01	9.139E-01
Th-230	Ra-226	1.000E+00	0.000E+00	3.499E-01	9.210E-01	9.199E-01
Th-230	Pb-210	1.000E+00	0.000E+00	3.408E-01	9.210E-01	9.200E-01

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

Source Factors for Ingrowth and Decay

Combined Radioactivity and Leaching Factors

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	SF(j,t) = CUMBRF(j)*S1(j,t)/S1(i,0)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	3.165E-14	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	1.000E+00	6.473E-01	2.013E-02	1.292E-02
Ra-226	Pb-210	1.000E+00	0.000E+00	6.565E-01	2.041E-02	1.310E-02
Th-230	Th-230	1.000E+00	1.000E+00	9.910E-01	9.223E-01	9.139E-01
Th-230	Ra-226	1.000E+00	0.000E+00	3.496E-01	9.176E-01	9.164E-01
Th-230	Pb-210	1.000E+00	0.000E+00	3.405E-01	9.176E-01	9.164E-01

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

The effect of volatilization was also considered when computing the source factors for H-3 and C-14.

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## Parameters Used for Calculating Cover Depth and Contaminated Zone Thicknesses

Cover Erosion rate (vcv): 0.000550 m/yr  
 Contaminated Zone Erosion rate (vcz): 0.000550 m/yr  
 Water Table Drop rate (vwt): 0.001000 m/yr  
 Precipitation rate (Pr): 0.200000 m/yr  
 Cover Removal Time (Tc): 5.818E+03 yr  
 Overhead irrigation rate (Irr): 0.000 m/yr  
 Evapotranspiration coeff. (Ce): 0.500  
 Bulk soil density (rhob): 1.800 g/cm\*\*3  
 Runoff coefficient (Cr): 0.974  
 Infiltration rate (In): 0.003 m/yr  
 Effective porosity (pe): 0.000

Radio-nuclide (i)	Distribution Coefficient Kd(i), cm**3/g	Leaching Ratio q(i)
Pb-210	1.000000E+02	1.210E-03
Ra-226	7.000000E+01	1.727E-03
Th-230	6.000000E+04	2.019E-06

## Time Dependence of Source Geometry

## Time Dependence of Cover Depth [Cd(i,t)]

Nuclide (i)	Cd(i,t) (meters)			
	t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	3.2000E+00	2.6500E+00	0.0000E+00	0.0000E+00
Ra-226	3.2000E+00	2.6500E+00	0.0000E+00	0.0000E+00
Th-230	3.2000E+00	2.6500E+00	0.0000E+00	0.0000E+00

## Time Dependence of Contaminated Zone Thicknesses [T(i,t)]

Nuclide (i)	T(i,t) (meters)			
	t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	1.2000E+01	1.2000E+01	1.0261E+01	9.7000E+00
Ra-226	1.2000E+01	1.2000E+01	1.0261E+01	9.7000E+00
Th-230	1.2000E+01	1.2000E+01	1.0261E+01	9.7000E+00

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## Occupancy, Cover/Depth, and Area Factors for Ground Pathway

Occupancy Factor (FO1): 0.000  
 Area (A): 324. sq. meters  
 Initial cover depth (Cd): 3.200 meters  
 Initial contaminated zone thickness (T): 12.000 meters

## Time Dependence of Cover/Depth Factor [FCTR\_COV\_DEPTH(i,t)]

Nuclide (i)	FCTR_COV_DEPTH(i,t) (dimensionless)			
	t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00

## Time Dependence of Area Factor [FCTR\_AREA(i,t)]

Nuclide (i)	FCTR_AREA(i,t) (dimensionless)			
	t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00

## Dose Conversion and Environmental Transport Factors for the Ground Pathway (p=1)

Parent (i)	Product (j)	DCF(j,1)*	ETF(j,1,t) (dimensionless)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	6.120E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.120E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	6.120E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.210E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.120E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	6.120E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are (mrem/yr)/(pCi/g) at infinite depth and area.

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Dose/Source Ratios for External Radiation from the Ground (p=1)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,1,t) (mrem/yr)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
 The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

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## Dose/Source Ratios for Inhalation Pathway, Excluding Radon (p=2)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,2,t) (mrem/yr)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

## Pathway Factors for the Inhalation Pathway (radon excluded)

Area (A):	3.2400E+02 m**2	Occupancy Factor (FO2):	1.0000E+00
Area Factor (FA2):	1.1841E-01	Annual Air Intake (F12):	8.4000E+03 m**3/yr
Cover Depth [Cd(0)]:	3.2000E+00 m	Mass Loading (ASR2):	1.0000E-04 g/m**3
Contaminated Zone Thickness [T(0)]:	1.2000E+01 m	FA2 * FO2 * F12 * ASR2:	9.9462E-02 g/yr

Nuclide (i)	Depth Factor [FD(i,2,t)] (dimensionless)	t=			
		0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210+D	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00	
Ra-226+D	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00	
Th-230	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00	

## Dose Conversion and Environmental Transport Factors for the Inhalation Pathway, Excluding Radon (p=2)

Parent (i)	Product (j)	DCF(j,2)*	ETF(j,2,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	2.320E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	8.600E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	2.320E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	3.260E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	8.600E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	2.320E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

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## Parameters Used for Calculating Indoor and Outdoor Radon Flux

	*Floor Material	Cover Material	Contaminated Zone
Radon Diffusion Coefficient (m**2/s)	3.000E-07	2.000E-06	2.000E-06
Total Porosity	1.000E-01	4.000E-01	4.000E-01
Volumetric Water Content	3.000E-02	5.000E-02	2.180E-01
Bulk Density (g/cm**3)	2.400E+00	1.500E+00	1.800E+00
Rn-222 Emanation Coefficient	2.500E-01	2.500E-01	2.500E-01
Initial Thickness (m)	1.500E-01	3.200E+00	1.200E+01

Building Depth Below Ground Surface \*(DMFL): -1.000E+00 (m)

Negative DMFL shows building depth adjusted (if necessary) for no penetration of contaminated zone. Actual values used \*(DMFLACT), m:

t= 0.0000E+00 1.0000E+03 8.9800E+03 1.0000E+04

DMFLACT= 1.0000E+00 1.0000E+00 0.0000E+00 0.0000E+00

Building indoor area factor \*(FAI): 0.000E+00

FAI &lt;= 0.0 shows calculated time-dependent value based on amount of wall area extending into the contaminated zone. Actual values used \*(FAIACT):

t= 0.0000E+00 1.0000E+03 8.9800E+03 1.0000E+04

FAIACT = 1.0000E+00 1.0000E+00 1.0000E+00 1.0000E+00

\* - Parameters are used only for indoor radon flux

## Time Dependence of Outdoor Radon Flux [FLUXO(i,t)]

Nuclide (i)	t=	FLUXO(i,t) (pCi/m**2/s)			
		0.000E+00	1.000E+03	8.980E+03	1.000E+04
Ra-226		1.0328E+02	1.1745E+02	5.5107E+01	3.5360E+01
Th-230		0.0000E+00	1.0936E+03	4.3313E+04	4.3251E+04

## Time Dependence of Indoor Radon Flux [FLUXI(i,t)]

Nuclide (i)	t=	FLUXI(i,t) (pCi/m**2/s)			
		0.000E+00	1.000E+03	8.980E+03	1.000E+04
Ra-226		5.4446E+01	6.2004E+01	1.0425E+01	6.6897E+00
Th-230		0.0000E+00	5.7730E+02	8.1939E+03	8.1827E+03

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Parameters Used for Calculating Indoor and Outdoor Radon Concentration

Radon Vertical Dimension of Mixing (HMIX): 2.000E+00 (m)  
 Average Annual Wind Speed (WIND): 2.000E+00 (m/sec)  
 Building Room Height (HRM): 2.500E+00 (m)  
 Building Air Exchange Rate (REXG): 5.000E-01 (1/hr)

## Time Dependence of Outdoor Radon Concentration [CRNO(i,t)]

Nuclide (i)	t=	CRNO(i,t) (pCi/m**3)			
	0.000E+00	1.000E+03	8.980E+03	1.000E+04	
Ra-226	2.3237E+02	2.6426E+02	1.2399E+02	7.9559E+01	
Th-230	0.0000E+00	2.4605E+03	9.7453E+04	9.7314E+04	

## Time Dependence of Indoor Radon Concentration [HCONC(i,r)]

Nuclide (i)	t=	HCONC(i,t) (pCi/m**3)			
	0.000E+00	1.000E+03	8.980E+03	1.000E+04	
Ra-226	1.5470E+05	1.7617E+05	2.9699E+04	1.9058E+04	
Th-230	0.0000E+00	1.6403E+06	2.3343E+07	2.3311E+07	

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Outdoor Working Levels of Radon [WLOTD(i,t)]

Nuclide (i)	t=	WLOTD(i,t) (WL)			
		0.000E+00	1.000E+03	8.980E+03	1.000E+04
Ra-226	2.0347E-06	2.3140E-06	1.0857E-06	6.9664E-07	
Th-230	0.0000E+00	2.1545E-05	8.5333E-04	8.5211E-04	

## Indoor Working Levels of Radon [WLIND(i,t)]

Nuclide (i)	t=	WLIND(i,t) (WL)			
		0.000E+00	1.000E+03	8.980E+03	1.000E+04
Ra-226	1.0667E+00	1.2148E+00	2.0479E-01	1.3142E-01	
Th-230	0.0000E+00	1.1311E+01	1.6096E+02	1.6074E+02	

Fraction of Time Spent Outdoors (FOTD): 1.000E+00

Fraction of Time Spent Indoors (FIND): 0.000E+00



Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Dose/Source Ratios for Radon Pathway (p=9)

Subpathway: Outdoor and Indoor Radon Flux

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,9,t) - DSRRNW(j,t) (mrem/yr)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	1.985E-05	2.257E-05	1.059E-05	6.794E-06
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		1.985E-05	2.257E-05	1.059E-05	6.794E-06
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	4.300E-09	1.220E-05	4.828E-04	4.821E-04
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		4.300E-09	1.220E-05	4.828E-04	4.821E-04

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

## Dose/Source Ratios for Radon Pathway (p=9)

Subpathway: Indoor Radon from Water Usage

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSRRNW(j,t) (mrem/yr)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Transport Time Parameters for Unsaturated Zone Stratum No. 1

Stratum thickness [h(1)]: 0.600000 m  
 Bulk soil material density [rhob(1)]: 1.800000 g/cm\*\*3  
 Effective porosity [peuz(1)]: 0.200000  
 Hydraulic conductivity [Khuz(1)]: 0.300000 m/yr  
 Total porosity [ptuz(1)]: 0.400000  
 Soil specific b parameter [buz(1)]: 5.300000  
 Saturation ratio [sruz(1)]: 0.705296

Radio-nuclide (i)	Distribution Coefficient Kduz(i,1), cm**3/g	Retardation Factor Rduz(i,1)	Transport Time Dtuz(i,1), yr
Pb-210	1.0000E+02	6.3903E+02	2.0802E+04
Ra-226	7.0000E+01	4.4762E+02	1.4571E+04
Th-230	6.0000E+04	3.8282E+05	1.2462E+07

## Transport Time Parameters for Unsaturated Zone Stratum No. 2

Stratum thickness [h(2)]: 4.430000 m  
 Bulk soil material density [rhob(2)]: 1.570000 g/cm\*\*3  
 Effective porosity [peuz(2)]: 0.200000  
 Hydraulic conductivity [Khuz(2)]: 189.000000 m/yr  
 Total porosity [ptuz(2)]: 0.400000  
 Soil specific b parameter [buz(2)]: 5.300000  
 Saturation ratio [sruz(2)]: 0.500000

Radio-nuclide (i)	Distribution Coefficient Kduz(i,2), cm**3/g	Retardation Factor Rduz(i,2)	Transport Time Dtuz(i,2), yr
Pb-210	1.0000E+02	7.8600E+02	1.3392E+05
Ra-226	7.0000E+01	5.5050E+02	9.3797E+04
Th-230	6.0000E+04	4.7100E+05	8.0251E+07

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Transport Time Parameters for Unsaturated Zone created by the Falling Water Table

Water table drop rate [vwt]: 0.001000 m/yr  
 Bulk soil material density [rhobaq]: 1.500000 g/cm\*\*3  
 Effective porosity [peaq]: 0.290000  
 Hydraulic conductivity [Khaq]: 239.000000 m/yr  
 Total porosity [ptaq]: 0.400000  
 Soil specific b parameter [baq]: 5.300000  
 Saturation ratio [sruaq]: 0.500000

Radio-nuclide	Distribution Coefficient	Retardation Factor	Minimum Transport Time
(i)	Kdaq(i), cm**3/g	Rduaq(i)	Dtuaq(i), yr
Pb-210	1.0000E+02	7.5100E+02	Infinite
Ra-226	7.0000E+01	5.2600E+02	Infinite
Th-230	6.0000E+04	4.5000E+05	Infinite

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Dilution Factor and Rise Time Parameters for Nondispersion (ND) Model

Aquifer contamination depth at well (z): 1.95816E-01 m  
 Depth of water intake below water table (dw): 1.00000E+01 m  
 Infiltration rate (In): 2.60000E-03 m/yr  
 Aquifer water flow rate (Vwfr): 2.39000E-01 m/yr  
 Hydraulic gradient (J): 1.00000E-03  
 Hydraulic conductivity of aquifer (Kszh): 2.39000E+02 m/yr  
 Contaminated zone extent parallel to gradient (l): 1.80000E+01 m  
 Distance below contaminated zone to water table (h): 0.50300E+01 m  
 Initial thickness of uncontaminated cover (Cd): 0.32000E+01 m  
 Initial thickness of contaminated zone (T): 0.12000E+02 m  
 Effective porosity of saturated zone (pesz): 0.29000E+00

Radio-nuclide (i)	Dilution Factor f(i)	Retardation Factor Rdsz(i)	Horizontal Transport Time Onsite Tauh(i), yr	Rise Time dt(i), yr	Decay Time Parameter 1/lamda(i), yr
Pb-210	3.370E-03	3.760E+02	8.212E+03	8.212E+03	3.217E+01
Ra-226	3.370E-03	2.635E+02	5.755E+03	5.755E+03	2.308E+03
Th-230	3.370E-03	2.250E+05	4.914E+06	4.914E+06	1.111E+05

Primary Parameters Used for Calculating Water/Soil Concentration Ratios for Groundwater Pathway Segment

Model used: Nondispersion (ND)

Bulk soil density in contaminated zone (rhob): 1.800 g/cm<sup>3</sup>

Radio-nuclide (i)	Dilution Factor f(i)	Retardation Factor Rdcz(i)	Breakthrough Time Chain year	Single Nuclide Dt(i), yr	Rise Time dt(i), yr
Pb-210	3.370E-03	8.267E+02	Infinite	Infinite	8.212E+03
Ra-226	3.370E-03	5.790E+02	Infinite	Infinite	5.755E+03
Th-230	3.370E-03	4.954E+05	Infinite	Infinite	4.914E+06

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Water/Soil Concentration Ratios [WSR(j,1,t)] for Groundwater Pathway Segment

Parent (i)	Product (j)	Branch Fraction*	WSR(j,1,t) in (pCi/L)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

## Water/Soil Concentration Ratios [WSR(j,2,t)] for Surface Water Pathway Segment

Watershed Area (A<sub>w</sub>) = 1.0000E+06 m\*\*2  
 Contaminated Zone Area (A) = 3.2400E+02 m\*\*2  
 Dilution Factor (f') = 3.2400E-04  
 Soil Density (rhob) = 1.8000E+00 kg/m\*\*3

Parent (i)	Product (j)	Branch Fraction*	WSR(j,2,t) in (pCi/L)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Storage Times For Contaminated Foodstuffs

k	Food Item	STOR_T(k), days
1	non-leafy plants	14.
2	leafy plants	1.
3	milk	1.
4	meat	20.
5	fish	7.
6	crustacea	7.
7	well water	1.
8	surface water	1.
9	livestock fodder	45.

Storage Time Ingrowth and Decay Factors

Storage Time for k'th Foodstuff:  $t = \text{STOR\_T}(k)$ , days

Parent (i)	Product (j)	Branch Fraction	STOR_ID(i,j,t) = CONCE(i,j,t)/CONCE(i,i,0)									
			t=	1.400E+01	1.000E+00	1.000E+00	2.000E+01	7.000E+00	7.000E+00	1.000E+00	1.000E+00	1.000E+00
Pb-210	Pb-210	1.000E+00	9.988E-01	9.999E-01	9.999E-01	9.983E-01	9.994E-01	9.994E-01	9.999E-01	9.999E-01	9.999E-01	
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Ra-226	Pb-210	1.000E+00	1.191E-03	8.510E-05	8.510E-05	1.701E-03	5.955E-04	5.955E-04	8.510E-05	8.510E-05	8.510E-05	
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Th-230	Ra-226	1.000E+00	1.661E-05	1.186E-06	1.186E-06	2.372E-05	8.303E-06	8.303E-06	1.186E-06	1.186E-06	1.186E-06	
Th-230	Pb-210	1.000E+00	9.888E-09	5.047E-11	5.047E-11	2.018E-08	2.472E-09	2.472E-09	5.047E-11	5.047E-11	5.047E-11	

CONCE(i,j,t)/CONCE(i,i,0) is the concentration ratio of Product(j) at time t to Parent(i) at start of

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Storage Time Correction Factors

Drinking Water from Well and/or Surface

Harvest Time = t - 2.74E-03 yr; Consumption Time = t yr

Parent (i)	Product (j)	Branch Fraction*	CFWW(j,t,1)#			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

## Storage Time Correction Factors

Irrigation Water for Nonleafy Plants from Well and/or Surface

Harvest Time = t - 4.11E-02 yr; Consumption Time = t - 3.83E-02 yr

Parent (i)	Product (j)	Branch Fraction*	CFWW(j,t,2)#			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Storage Time Correction Factors

Irrigation Water for Leafy Plants from Well and/or Surface

Harvest Time = t - 5.48E-03 yr; Consumption Time = t - 2.74E-03 yr

Parent (i)	Product (j)	Branch Fraction*	t=	CFWW(j,t,3)#		
				0.000E+00	1.000E+03	8.980E+03 1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

## Storage Time Correction Factors

Irrigation Water for Livestock (Milk) Fodder from Well and/or Surface

Harvest Time = t - 1.29E-01 yr; Consumption Time = t - 1.26E-01 yr

Parent (i)	Product (j)	Branch Fraction*	t=	CFWW(j,t,5)#		
				0.000E+00	1.000E+03	8.980E+03 1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).



Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Storage Time Correction Factors

Irrigation Water for Livestock (Meat) Fodder from Well and/or Surface

Harvest Time = t - 1.81E-01 yr; Consumption Time = t - 1.78E-01 yr

Parent (i)	Product (j)	Branch Fraction*	t=	CFWW(j,t,7)#		
				0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
 #Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors

Livestock (Milk) Water from Well and/or Surface

Harvest Time = t - 5.48E-03 yr; Consumption Time = t - 2.74E-03 yr

Parent (i)	Product (j)	Branch Fraction*	t=	CFWW(j,t,4)#		
				0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
 #Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Storage Time Correction Factors

Livestock (Meat) Water from Well and/or Surface

Harvest Time = t - 5.75E-02 yr; Consumption Time = t - 5.48E-02 yr

Parent (i)	Product (j)	Branch Fraction*	t=	0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01	
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
 #Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

## Storage Time Correction Factors for Nonleafy Plants

Harvest Time = t - 3.83E-02 yr; Consumption Time = t yr

Parent (i)	Product (j)	Branch Fraction*	t=	0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.988E-01	9.988E-01	9.988E-01	
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
 #Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

## Storage Time Correction Factors for Leafy Plants

Harvest Time = t - 2.74E-03 yr; Consumption Time = t yr

Parent (i)	Product (j)	Branch Fraction*	t=	0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01	
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Storage Time Correction Factors for Leafy Plants

Harvest Time = t - 2.74E-03 yr; Consumption Time = t yr

Parent (i)	Product (j)	Branch Fraction*	CF3(j,2,t)#			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

## Storage Time Correction Factors for Livestock (Meat) Fodder

Harvest Time = t - 1.78E-01 yr; Consumption Time = t - 5.48E-02 yr

Parent (i)	Product (j)	Branch Fraction*	CFLF(j,1,t)#			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.962E-01	9.962E-01	9.962E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.011E+00	1.011E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.011E+00	1.011E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

## Storage Time Correction Factors for Livestock (Milk) Fodder

Harvest Time = t - 1.26E-01 yr; Consumption Time = t - 2.74E-03 yr

Parent (i)	Product (j)	Branch Fraction*	CFLF(j,2,t)#			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.962E-01	9.962E-01	9.962E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.011E+00	1.011E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.011E+00	1.011E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Detailed: RESRAD Default Parameters

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## Storage Time Correction Factors for Meat

Harvest Time = t - 5.48E-02 yr; Consumption Time = t yr

Parent (i)	Product (j)	Branch Fraction*	CF45(j,1,t)#			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.983E-01	9.983E-01	9.983E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.004E+00	1.004E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.004E+00	1.004E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

## Storage Time Correction Factors for Milk

Harvest Time = t - 2.74E-03 yr; Consumption Time = t yr

Parent (i)	Product (j)	Branch Fraction*	CF45(j,2,t)#			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.999E-01	9.999E-01	9.999E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.001E+00	1.001E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.001E+00	1.001E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

## Storage Time Correction Factors for Fish &amp; Crustacea

Harvest Time = t - 1.92E-02 yr; Consumption Time = t yr

Parent (i)	Product (j)	Branch Fraction*	CFF(j,1,t)#			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	1.000E+00	9.994E-01	9.994E-01	9.994E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Ra-226	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Pb-210	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Detailed: RESRAD Default Parameters

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Area and Depth Factors for Plant (p=3), Meat (p=4), and Milk (p=5) Pathways  
 Root Uptake from Contaminated Soil (q=1)

Area Factor for Plant Foods [FA(3)] = 0.16

Nuclide (i)	Depth Factor FD(i,1,t) (dimensionless)			
	t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00
Ra-226	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00
Th-230	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00

Area and Depth Factors for Plant (p=3), Meat (p=4), and Milk (p=5) Pathways  
 Foliar Uptake from Contaminated Dust (q=2)

Area Factor for Plant Foods [FA(3)] = 0.16

Nuclide (i)	Depth Factor FD(i,2,t) (dimensionless)			
	t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00
Ra-226	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00
Th-230	0.0000E+00	0.0000E+00	1.0000E+00	1.0000E+00

Area and Depth Factors for Plant (p=3), Meat (p=4), and Milk (p=5) Pathways  
 Ditch Irrigation (q=3)

Area Factor for Plant Foods [FA(3)] = 0.16

Nuclide (i)	Depth Factor FD(i,3,t) (dimensionless)			
	t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Ra-226	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Th-230	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

Detailed: RESRAD Default Parameters

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Area and Depth Factors for Plant (p=3), Meat (p=4), and Milk (p=5) Pathways  
Overhead Irrigation (q=4)

Area Factor for Plant Foods [FA(3)] = 0.16

The Depth Factor Value

FD(i,p,q,t) = 1.0000E+00

is applicable for all radionuclides(i) and times(t).

Area and Depth Factors for Meat (p=4) and Milk (p=5) Pathways  
Transfer from Livestock Water (q=5) and Soil (q=6) Intake

Area Factor for Meat and Milk [FA(p),p=4,5] = 0.02

The livestock water subpathway (q=5) and livestock soil intake subpathway (q=6)  
occur only for the meat (p=4) and milk (p=5) pathways.

Area and Depth Factors for Meat (p=4) and Milk (p=5) Pathways  
Transfer from Livestock Water (q=5) and Soil (q=6) Intake

Area Factor for Meat and Milk [FA(p),p=4,5] = 0.02

The livestock water subpathway (q=5) and livestock soil intake subpathway (q=6)  
occur only for the meat (p=4) and milk (p=5) pathways.

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Dose Conversion and Environmental Transport Factors for the Plant Food Pathway (p=3)

Subpathway: Root Uptake from Contaminated Soil (q=1)

Parent (i)	Product (j)	DCF(j,3)*	ETF(j,3,1,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Plant Food Pathway (p=3)

Subpathway: Foliar Uptake from Contaminated Dust (q=2)

Parent (i)	Product (j)	DCF(j,3)*	ETF(j,3,2,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Plant Food Pathway (p=3)

Subpathway: Ditch Irrigation (q=3)

Parent (i)	Product (j)	DCF(j,3)*	ETF(j,3,3,t) * SF(j,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Dose Conversion and Environmental Transport Factors for the Plant Food Pathway (p=3)  
 Subpathway: Overhead Irrigation (q=4)

Parent (i)	Product (j)	DCF(j,3)*	ETF(j,3,4,t) * SF(j,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.



Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)  
 Subpathway: Fodder Root Uptake from Contaminated Soil (q=1)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,1,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)  
 Subpathway: Fodder Foliar Uptake from Contaminated Dust (q=2)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,2,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)  
 Subpathway: Ditch Irrigation (q=3)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,3,t) * SF(j,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)  
 Subpathway: Overhead Irrigation (q=4)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,4,t) * SF(j,t) (g/yr)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)  
 Subpathway: Livestock Water (q=5)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,5,t) * SF(j,t) (g/yr)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)  
 Subpathway: Fodder Root Uptake from Contaminated Soil (q=1)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,1,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)  
 Subpathway: Fodder Foliar Uptake from Contaminated Dust (q=2)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,2,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)  
 Subpathway: Ditch Irrigation (q=3)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,3,t) * SF(j,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Detailed: RESRAD Default Parameters

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Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)  
 Subpathway: Overhead Irrigation (q=4)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,4,t) * SF(j,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)  
 Subpathway: Livestock Water (q=5)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,5,t) * SF(j,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Detailed: RESRAD Default Parameters

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## Dose Conversion and Environmental Transport Factors for the Fish Pathway (p=6)

Parent (i)	Product (j)	DCF(j,6)*	ETF(j,6,t) * SF(j,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

## Dose Conversion and Environmental Transport Factors for the Drinking Water Pathway (p=7)

Parent (i)	Product (j)	DCF(j,7)*	ETF(j,7,t) * SF(j,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.

Detailed: RESRAD Default Parameters

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Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)

Subpathway: Root Uptake from Contaminated Soil (q=1)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,3,1,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)

Subpathway: Foliar Uptake from Contaminated Dust (q=2)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,3,2,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

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Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)

Subpathway: Ditch Irrigation (q=3)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,3,3,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)

Subpathway: Overhead Irrigation (q=4)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,3,4,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Detailed: RESRAD Default Parameters

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Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)

Total for All Subpathways

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,3,t) (mrem/yr)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
 The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.



Detailed: RESRAD Default Parameters

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Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)

Subpathway: Fodder Root Uptake from Contaminated Soil (q=1)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,4,1,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)

Subpathway: Fodder Foliar Uptake from Contaminated Dust (q=2)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,4,2,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

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Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)

Subpathway: Ditch Irrigation (q=3)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,4,3,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)

Subpathway: Overhead Irrigation (q=4)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,4,4,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

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Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)

Subpathway: Livestock Water (q=5)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,4,5,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)

Total for All Subpathways

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,4,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)

Subpathway: Fodder Root Uptake from Contaminated Soil (q=1)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,5,1,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)

Subpathway: Fodder Foliar Uptake from Contaminated Dust (q=2)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,5,2,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Detailed: RESRAD Default Parameters

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Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)

Subpathway: Ditch Irrigation (q=3)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,5,3,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)

Subpathway: Overhead Irrigation (q=4)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,5,4,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Detailed: RESRAD Default Parameters

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Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)

Subpathway: Livestock Water (q=5)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,5,5,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)

Total for All Subpathways

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,5,t) (mrem/yr)/(pCi/g)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Detailed: RESRAD Default Parameters

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Dose/Source Ratios for Internal Radiation from the Ingestion of Fish (p=6)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,6,t) (mrem/yr)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
 The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Dose/Source Ratios for Internal Radiation from the Ingestion of Drinking Water (p=7)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,7,t) (mrem/yr)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR

The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.



Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Plant/Air and Plant/Water Concentration Ratios

Mass loading [ASR(3)]: 1.000E-04 g/m\*\*3

Area Factor for Mass Loading [FA(2)]: 1.184E-01

Nuclide (i)	FAR(i,3,2,1) m**3/g	FAR(i,3,2,2) m**3/g	FWR(i,3,3,1) L/g	FWR(i,3,3,2) L/g	FWR(i,3,4,1) L/g	FWR(i,3,4,2) L/g
Pb-210	5.4545E-02	2.6156E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Ra-226	5.4545E-02	2.6156E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Th-230	5.4545E-02	2.6156E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

FAR(i,p,q,k) is the plant/air concentration ratio for airborne contaminated dust,  
and FWR(i,p,q,k) is the plant/water concentration ratio. See groundwater displays  
for water/soil concentration ratios.

## Plant/Soil Concentration Ratios, FSR(i,3,q,k,t)

Root Uptake (q=1) and Foliar Dust Deposition (q=2)  
Nonleafy (k=1) and/or Leafy (k=2) Vegetables

Nuclide (i)		FSR(i,3,1,k)	FSR(i,3,2,1)	FSR(i,3,2,2)
Parent	Product			
Pb-210	Pb-210	1.0000E-02	6.4586E-07	3.0970E-06
Ra-226	Ra-226	4.0000E-02	6.4586E-07	3.0970E-06
Ra-226	Pb-210	1.0000E-02	6.4586E-07	3.0970E-06
Th-230	Th-230	1.0000E-03	6.4586E-07	3.0970E-06
Th-230	Ra-226	4.0000E-02	6.4586E-07	3.0970E-06
Th-230	Pb-210	1.0000E-02	6.4586E-07	3.0970E-06

## Plant/Soil Concentration Ratio, FSR(j,3,q,k,t)

Ditch Irrigation (q=3)

Parent (i)	Product (j)	Branch Fraction*	t=	FSR(j,3,3,k,t)			
				0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Plant/Soil Concentration Ratio, FSR(j,3,q,k,t)  
Overhead Irrigation (q=4) and Nonleafy Vegetables (k=1)

Parent (i)	Product (j)	Branch Fraction*	FSR(j,3,4,1,t) * SF(j,t)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Plant/Soil Concentration Ratio, FSR(j,3,q,k,t)  
Overhead Irrigation (q=4) and Leafy Vegetables (k=2)

Parent (i)	Product (j)	Branch Fraction*	FSR(j,3,4,2,t) * SF(j,t)			
			t=	0.000E+00	1.000E+03	8.980E+03
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

## Meat/Fodder, Milk/Fodder, Fodder/Air and Fodder/Water Concentration Ratios

FI(4,q): 68.0 kg/day      FI(5,q): 55.0 kg/day      q=1,2,3,4  
 FI(4,q): 50.0 L/day      FI(5,q): 160.0 L/day      q=5  
 FI(4,q): 0.5 kg/day      FI(5,q):

Nuclide (i)	FQR(i,4) d/kg	FQR(i,5) d/kg	FAR(i,3,2,3) m**3/g	FWR(i,3,3,3) L/g	FWR(i,3,4,3) L/g
Pb-210	8.0000E-04	3.0000E-04	2.8659E-01	0.0000E+00	0.0000E+00
Ra-226	1.0000E-03	1.0000E-03	2.8659E-01	0.0000E+00	0.0000E+00
Th-230	1.0000E-04	5.0000E-06	2.8659E-01	0.0000E+00	0.0000E+00

FI(p,q) are the fodder (q=1,2,3,4), livestock water (q=5) and soil (q=6) intake rates;

FQR(i,p) are the transfer coefficients from contaminated fodder of livestock

water to meat (p=4) or milk (p=5). FAR(i,3,2,3) are the fodder/air

concentration ratios, and FWR(i,3,3,3) and FWR(i,3,4,3) are the fodder/

water concentration ratios for ditch and overhead irrigation, respectively.

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Fodder/Soil Concentration Ratios,  $QSR(i,p,q,t)$ , for Meat and Milk Pathways  
 Root Uptake ( $q=1$ ) and Foliar Dust Deposition ( $q=2$ )

Nuclide(i)			
Parent	Product	$QSR(i,p,1)$	$QSR(i,p,2)$
Pb-210	Pb-210	1.0000E-02	3.3934E-06
Ra-226	Ra-226	4.0000E-02	3.3934E-06
Ra-226	Pb-210	1.0000E-02	3.3934E-06
Th-230	Th-230	1.0000E-03	3.3934E-06
Th-230	Ra-226	4.0000E-02	3.3934E-06
Th-230	Pb-210	1.0000E-02	3.3934E-06

Fodder/Soil Concentration Ratio,  $QSR(j,p,q,t)$ , for Meat and Milk Pathways  
 Ditch Irrigation ( $q=3$ )

Parent (i)	Product (j)	Branch Fraction*	t=	$QSR(j,p,3,t) * SF(j,t)$			
				0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00

Fodder/Soil Concentration Ratio,  $QSR(j,p,q,t)$ , for Meat and Milk Pathways  
 Overhead Irrigation ( $q=4$ )

Parent (i)	Product (j)	Branch Fraction*	t=	$QSR(j,p,4,t) * SF(j,t)$			
				0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Fodder/Soil Concentration Ratio, QSR(j,p,q,t), for Meat and Milk Pathways  
Livestock Water (q=5)

Parent (i)	Product (j)	Branch Fraction*	QSR(j,p,5,t) * SF(j,t)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Meat/Soil Concentration Ratios, FSR(i,4,q,t)  
 Root Uptake (q=1) and Foliar Dust Deposition (q=2)

Nuclide(i)			
Parent	Product	FSR(i,4,1)	FSR(i,4,2)
Pb-210	Pb-210	0.0000E+00	0.0000E+00
Ra-226	Ra-226	0.0000E+00	0.0000E+00
Ra-226	Pb-210	0.0000E+00	0.0000E+00
Th-230	Th-230	0.0000E+00	0.0000E+00
Th-230	Ra-226	0.0000E+00	0.0000E+00
Th-230	Pb-210	0.0000E+00	0.0000E+00

Meat/Soil Concentration Ratio, FSR(j,4,q,t)  
 Ditch Irrigation (q=3)

Parent (i)	Product (j)	Branch Fraction*	t=	FSR(j,4,3,t) * SF(j,t)			
				0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00

Meat/Soil Concentration Ratio, FSR(j,4,q,t)  
 Overhead Irrigation (q=4)

Parent (i)	Product (j)	Branch Fraction*	t=	FSR(j,4,4,t) * SF(j,t)			
				0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00

Detailed: RESRAD Default Parameters

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Meat/Soil Concentration Ratio, FSR(j,4,q,t)  
 Livestock Water (q=5)

Parent (i)	Product (j)	Branch Fraction*	FSR(j,4,5,t) * SF(j,t)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Milk/Soil Concentration Ratios, FSR(i,5,q,t)  
 Root Uptake (q=1) and Foliar Dust Deposition (q=2)

Nuclide(i)			
Parent	Product	FSR(i,5,1)	FSR(i,5,2)
Pb-210	Pb-210	0.0000E+00	0.0000E+00
Ra-226	Ra-226	0.0000E+00	0.0000E+00
Ra-226	Pb-210	0.0000E+00	0.0000E+00
Th-230	Th-230	0.0000E+00	0.0000E+00
Th-230	Ra-226	0.0000E+00	0.0000E+00
Th-230	Pb-210	0.0000E+00	0.0000E+00

Milk/Soil Concentration Ratio, FSR(j,5,q,t)  
 Ditch Irrigation (q=3)

Parent (i)	Product (j)	Branch Fraction*	t=	FSR(j,5,3,t) * SF(j,t)			
				0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00

Milk/Soil Concentration Ratio, FSR(j,5,q,t)  
 Overhead Irrigation (q=4)

Parent (i)	Product (j)	Branch Fraction*	t=	FSR(j,5,4,t) * SF(j,t)			
				0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000E+00



Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Milk/Soil Concentration Ratio, FSR(j,5,q,t)  
 Livestock Water (q=5)

Parent (i)	Product (j)	Branch Fraction*	FSR(j,5,5,t) * SF(j,t)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Detailed: RESRAD Default Parameters

File : Silo3\_radon\_highKd\_LIR\_LC\_0.00055.RAD

Dose/Source Ratios for Soil Ingestion Pathway (p=8)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Branch Fraction*	DSR(j,8,t) (mrem/yr)/(pCi/g)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	ΣDSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00

\*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BR  
 The DSR includes contributions from associated (half-life ≤ 0.5 yr) daughters.

Dose Conversion and Environmental Transport Factors for the Soil Ingestion Pathway (p=8)

Parent (i)	Product (j)	DCF(j,8)*	ETF(j,8,t) (g/yr)			
			t= 0.000E+00	1.000E+03	8.980E+03	1.000E+04
Pb-210	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Ra-226	1.330E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	Pb-210	7.270E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00

\* - The dose conversion factor units are mrem/pCi.